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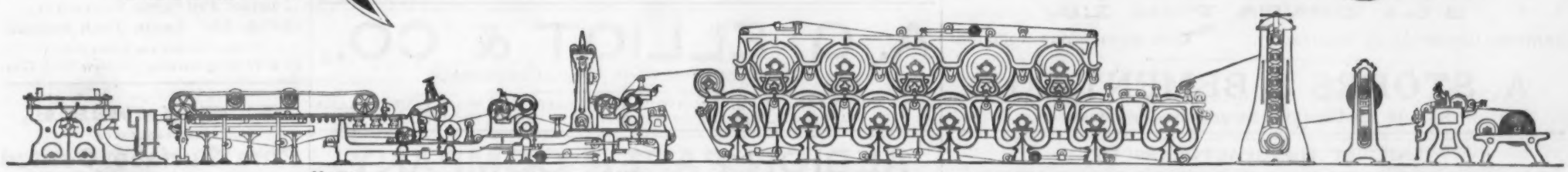


"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIII.—NO. 15. NEW YORK, APRIL 14, 1894. WHOLE NUMBER 1041.

Trade Topics.

Improvement in Calenders.

An illustration is given of an improvement in calendering machines in which provision is made for quick and easy adjustment of the pressure upon either one or both of the ends of the calender rolls, the mechanism for this purpose consisting of independent adjusting shafts to vary the pressure at the ends of the rolls, combined with a separate clutch member for and to operate each of said adjusting shafts respectively, and a common actuator rotatable in either direction, located adjacent to said clutch members and adapted to be thrown into operative engagement with either or both of them to rotate the adjusting shafts singly or simultaneously in either direction.

Figure 1 showing the calenders in front elevation illustrates the invention; Fig. 2 is a right hand side view; Fig. 3 is an enlarged detail, partly broken out, of the pressure operating mechanism; Fig. 4 is a detached view of one part of the clutch mechanism, and Figs. 5 and 6 are details.

The upright frames A, in which the calender rolls B have their bearings, tie rods 1 and 2, and the cross heads A' may be and are of usual construction.

A nut a, having an annular shoulder a' near its lower end, and interiorly threaded, is extended through each cross head from the lower side, so as to rotate freely therein, and toothed wheels b and b' are rigidly attached to the ends of the respective nuts above the cross heads. Threaded rods c c' are extended through the nuts a, and are connected at their lower ends to caps $c^{3\times}$, one only being shown in Fig. 2, which bear upon the journals of the topmost roll of the stack, so that rotation of the threaded nuts will raise or lower the threaded rods c c', to thereby move the caps $c^{3\times}$ correspondingly.

Upright adjusting shafts b^3 b^3, one at each side of the machine, are supported in suitable bearings $a^\times$ $b^\times$ secured to the to the frame, pinions c^3, c^3 being secured to the shafts and in mesh with the large gears b and b' respectively, while the lower ends of the shafts have secured thereto bevel gears d and d', engaging other bevel gears d^3 d^3. An actuating shaft, e, has its bearings in brackets $e^\times$, forming a part of the bearings $b^\times$, this shaft being preferably reduced in diameter where it enters its bearings to prevent longitudinal movement. The bevel gear d^3 is fast on the actuating shaft e, but the gear d^3 is loose thereon, a key or collar 10 bearing against its recessed hub and preventing longitudinal movement. The outer face of the hub is toothed or serrated, as at e', and this hub forms a clutch member, whereby it is adapted to be engaged at times by the toothed inner face e^3 of the hub of an actuator, shown as a hand wheel, C, free to rotate or move longitudinally upon the actuating shaft when in the position shown in Fig. 3, the outer face e^3 of the hub being likewise toothed.

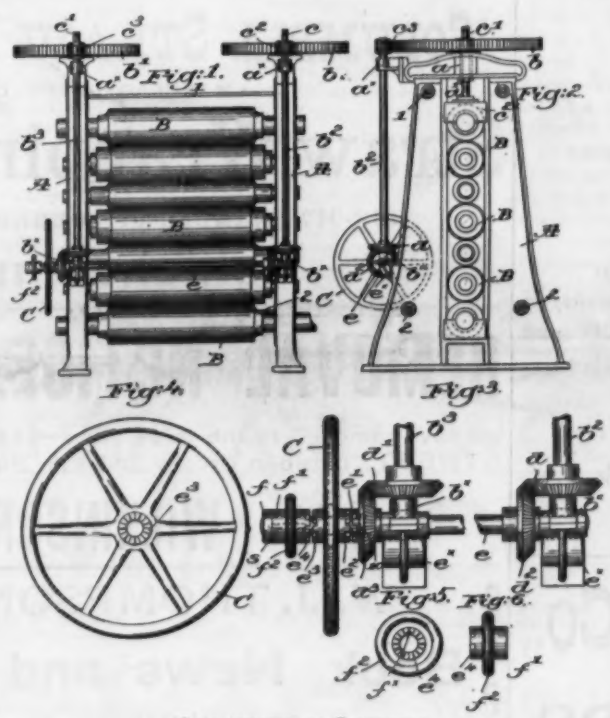
A suitable collar, f, is secured to the shaft e, and between it and the actuator a flanged hub, f', is splined to the actuating shaft, the hub being grooved at $f^\times$ (Fig. 5) to receive the spline s. The flange f^3 of the hub is preferably rounded, whereby it may be readily grasped and moved by the operator, and the inner face of the hub is toothed, as at e^4, to form a second clutch member.

As will be evident the two clutch members, the actuator C, and its toothed hub forming connections between these members and the actuator, form a double clutch, and it is obvious that any other suitable clutch may be used, the form of the teeth may be varied, or friction surfaces may be used instead of the teeth. With the parts in the position shown in Figs. 1 and 3, rotation of the hand wheel or actuator C will produce no effect; but if it is moved along the shaft e to the right, Fig. 3, until the toothed faces e^3 and e' engage, and is then rotated, the gears d^3, d' will be rotated, and through the adjusting shaft b^3 and intermediate gearing the cap at the left, Fig. 1, will be raised or depressed to decrease or increase the pressure at the end of the stack of rolls B.

To vary the pressure at the other end of the rolls it is only necessary to move the actuator C to the left on the shaft e, whereby the toothed surfaces e' and e^3 are disengaged, continuing the movement until the toothed surfaces e^3 and e^4 are in engagement. Rotation of the actuator will then, through the hub f', rotate the shaft e and gear d^3 fast thereon, and thereby actuate the threaded rod c to raise or lower the cap $c^{3\times}$ at the right hand end of the stack, varying the pressure at the end of the rolls B. If it is desired to vary the pressure at both ends of the rolls simultaneously, the actuator C and the hub f', still in engagement, are moved together to the right, Figs. 1 and 3, until the surfaces e' and e^3 also engage, whereupon rotation of the actuator C will rotate the gear d^3 directly, and the gear d^3 indirectly through shaft e and hub f'.

The clutch members which operate the adjusting shafts are adapted to be brought into engagement with the actuator by the connections between it and the separate clutch members, and the pressure can be immediately increased or decreased at each end of the rolls independently or simultaneously, so that the greatest nicety of adjustment is secured with ease and rapidity.

If the clutch mechanism is in engagement to adjust the ends of the rolls simultaneously, and it is desired to vary the pressure at the right hand end, the hub f' is moved to the left out of engagement with the actuator and the actuating shaft rotated by means of the flange f^3, thus leaving the actuator C in position to rotate the adjusting shaft b^3 independently, or both actuator and hub remaining in engagement with each other, may be moved to the left until the faces e' and e^3 are disengaged, when the actuating shaft and adjusting shaft b^3 can be rotated by the actuator or hand wheeel C.



IMPROVEMENT IN CALENDERS.

Putting in a Paper Mill Electric Plant.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY JAMES F. HOBART.

Seventh Paper.

Poor contacts, badly adjusted brushes, dirty connections, carelessness and stupidity, are the most common reasons why electric plants do not do as well as they should, and why there are so many worn out commutators, sparking machines, burned out armatures, and fires in and around the paper mill electric plant.

First, as to badly adjusted brushes. This is the cause of more than two-thirds of the trouble which occurs outside of grounds and short circuits. The brushes of a dynamo should be placed exactly opposite to each other. Count out the commutator segments until you find two which are exactly opposite each other. Mark these segments with a drill mark, or a scratch from an awl. Don't try to mark them with a chisel, or you may raise the mischief by knocking a segment out of place, or denting it so deeply that it will work badly.

Having once laid out two opposite commutator segments, set the brushes upon them so that the toe or extreme end of each brush will just bear upon the forward part of the opposite segments at the same time. When set in this manner the brushes leave opposite segments at the same instant, and sparking is reduced to its lowest terms.

The great trouble from poorly set brushes is sparking. It must be borne in mind that every time a spark is visible on the dynamo a bit of copper has been burned either out of the commutator or out of the brushes. Just for experiment put the brushes on a machine at right angles to each other instead of opposite, and see how the machine will spark then. You can try this by using a bit of insulated wire 2 or 3 feet long, with a brush soldered to one end of it. Put a bit of rubber tubing on the wire to increase the insulation. Clamp the free end of the wire into the empty brush holder, then "explore" the commutator by moving the brush around on it. Some very interesting things will be discovered in this way, but do not do it long at a time, but for only a few seconds, or you may cause trouble by heating a coil or two, or by cutting the commutator by excessive sparking.

Brushes bearing too hard will cut the commutator and get it "out of round," and when this is done sparking must take place, as the brushes jump from one bunch to another and tumble around among the hills and hollows. Coming right down to business we can find six causes for sparking at the commutator, viz.:

I. Faulty adjustment of the brushes.

II. Poor condition of the brushes and brush holders.

III. Dirt, grease or roughness on face of commutator.

IV. Defective insulation of a field magnet coil or short circuiting therein.

V. Two or more of the commutator segments may be short circuited.

VI. The dynamo may be overloaded.

The first having already been discussed, there is nothing more to say regarding it except that the brushes should be set diametrically opposite each other with great exactness, and the brush holder should then be revolved until the position of least sparking has been reached. This point varies in different dynamos, according to the manner in which the armature is wound, or rather in which it is connected up to the commutator. In some armatures the connections to the commutator are twisted 90° or so, instead of going out radically from the coils to which they are connected. With such connected armatures the brushes have to be twisted around 90° also. When the connections come right out straight, or parallel with the armature shaft, the brushes come somewhere near being opposite the openings between the fields. When the connections are twisted as described the brushes stand against and opposite to the fields of the dynamo. In either case, however, the brushes will have to be carried ahead (in the direction of rotation) a little. The number of degrees the brushes must be moved ahead in this manner is called the "angle of lead," and each machine differs from all others in having a lead peculiar to itself. The "lead" is made necessary because the magnetic field, or lines of force between the pole pieces, are carried around a certain distance by the action of the electricity and magnetism in the armature, and it is to come up with this change of field that the brushes have to be shifted forward or given "lead." Therefore do not get fooled and spend time in trying to make the dynamo run well with the brushes 90° out of position.

2. The poor condition of the brushes and brush holders means that the brushes are untrimmed, or not trimmed well; that there is dirt or grease on the brushes or in the holders, and that some of the contacts may be loose. Look out for all these things.

3. Rough, dirty or greasy commutator, &c. Oil is bad on a commutator. It never should be used. Hardly any lubrication is necessary, and at best only a very little vaseline should be put on. Just see how it works; put on a lot of oil, and pretty soon a spark carbonizes some of it, and the carbon thus formed gets wedged into the slight cavity between two of the commutator segments, short circuiting them and raising the devil very quickly. The rough commutator is just as bad, as already described. Make the commutator round. Keep it so. Keep the branches opposite to each other, and bearing in the lightest possible way upon the commutator. The brushes should bear just so that a nice brown glaze will come all over the commutator. When that comes, try to keep it. Do not permit any man or boy to touch sand paper to that commutator as long as it remains thus glazed over. Do this notwithstanding the directions issued by some manufacturers to the effect that a commutator should be trued up slightly at the close of each night's run. If the commutator is in good shape, let it alone as long as it stays so.

4. Defective insulation of field magnet coils, short circuiting thereon, &c. It has already been told how to hunt out and cure trouble like this. It will cause sparking at the brushes by making one field stronger than the other, and to run a dynamo thus defective without its sparking the brushes must be set out of line, or so that they do not bear on segments diametrically opposite each other. Hence, when a dry dynamo will run with the brushes thus out of place (run without sparking), we must look for trouble in the field magnet coils.

5. Commutator segments short circuited. This "disease" has already been discussed; also the way to find and cure the trouble. I need only say here that it causes sparking by providing a path whereby the current can jump across from segment to brush without going around through the line to do useful work. It is about as if a man had a by-pass valve in his heart whereby some of the blood could jump across once every twenty or thirty beats instead of going out into the arteries and coming back through the veins and doing its allotted work. Such an occurrence would cause "sparking" and some other disturbances. We may well say that when a dynamo sparks it has heart complaint.

6. The dynamo may be overloaded. Here is a big cause of trouble. Sometimes it is impossible to keep the lamps up to full brightness; the dynamo belt labors, the sparks fly off at the commutator, and sometimes there seems to be a ring of fire all around the commutator. All of this is due to too much work for the machine. Take one instance or two. A dynamo is billed to us as a "ten kilowatt" generator. That means that it has a capacity of 10,000 watts. There would have been no mystery about the rating name if they had said 10 "thousand watts" instead of 10 kilowatts; but kilo is French for 1,000, hence its adoption to suit the metric nomenclature. One dynamo is to yield 10,000 watts. As 746 watts equal one horse power, 10,000 watts will equal about 13.4 horse power, and friction included it should never require more than 14 horse power to operate this dynamo.

Now, whenever the machine appears to be doing more than its work, when the brushes spark badly and the belt strains and the lamps grow more or less dim, just note the readings of the ammetre and voltmetre and find out just what the dynamo is doing. The voltmetre reads 108; The ammetre says 125 amperes. That means that $100 \times 125 = 13{,}500$ watts which are put out of the machine and that nearly 18 horse power is being put into the dynamo, and that it is turning out a current of 3,500 watts above its rated capacity. No wonder that the fire flies and the belt flops. The machine is overworked 35 per cent., making its total output 135 per cent. of what it can safely do. Look out for this point. It damages a dynamo badly, and we should take great care that no more lamps are attached to the machine than it can safely carry while all are turned on at once. The overload may be caused not only by too many lamps, but by leakage on the line, due to poor insulation, grounds, short circuits, &c.

(To be continued.)

Extracts from John's Letter.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

Mr. Editor:

McDougal and his cylinder machine wet part make a striking contrast to Marion and his machine, of which I wrote in my last. Here in these two cases we have two men and two machines. In the one the character, business ability and knowledge of the manufacture of paper, as well as the proper conception and construction of machinery so necessary to produce it, are as different from the characteristics of the other as the difference in the quality of their respective products, although the latter is trying to imitate the other in his output as nearly as it is possible for him to do so.

* * *

McDougal has a fountain of ideas; he is wonderfully clear in conception, and all things in and around his mill seem to be affected or in touch with his master mind and move along as smoothly as anyone would desire. There is no need of placing any makeshifts on his machine, because when it was built nothing was considered satisfactory which had not passed the test in some other mill and there proved satisfactory and well adapted to the purpose for which it was intended, besides having to pass the personal inspection of McDougal himself. Whatever was put into his mill in the shape of machinery was built with the express purpose of making his one grade of paper, and was constructed after the most searching investigation and upon the most advanced ideas. He also gives his business personal attention, considering nothing beneath his scrutiny, from the introduction of the stock and its various manipulations to the finishing of the product and finding a profitable market for the same. I never get tired of admiring McDougal and his good judgment, and since I have written you a few things concerning our friend Marion and his vat trouble I believe that it wouldn't be a bad idea to give you a small and accurate description of how McDougal has the wet part of his machine rigged up.

* * *

His machine has two Gould screens, four settling or mixing boxes, four 30 inch cylinder molds, four 5 inch fan pumps, a

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* * *

The stock as it left each screen is independently piped through 8 inch wrought iron pipes, downward to the floor into a T pipe connection, and onto this T is screwed a horizontal pipe, extending along the surface of the floor, its end being provided with another T, into which is screwed a perpendicular pipe, having at its upper end a flange securely fastened to the bottom of the flow or distributing box. Now this horizontal pipe with T's on each end and a perpendicular pipe, one end of which connects with the screen, while the other connects with the flow or distributing box, has the ends of the horizontal pipe and T's open, the latter having large flanges cast on their external or open ends, nicely faced off. Against these faced off flanges are placed closing plates, which have one side finished, namely, that which is to be placed against the flange of the T connection, a rubber gasket of course fitting between the two, all for the purpose of closing the end of the T connection and horizontal pipe. These closing plates are held in place on the ends of the T's by wrought iron clamps, so made that they drop over the flange, and each clamp has two set screws in it, which, when operated, tightly clamp the closing plate against the end flange on the T, thereby closing the orifice in the horizontal pipe. Perhaps you will wonder why this construction! I will tell you. The T with a flange closing plate and clamp is used instead of an ordinary elbow, because this construction permits the easy and quick removal of the closing plate at the end of the horizontal pipe, giving easy and quick access to the inside of the pipe, to clean it from slime and accumulations which hang to all pipes when in use for this purpose. It will be seen that with the closing plates removed the machine tender can at his will swab or wash this pipe.

* * *

The flow or distributing box which receives the pulp from the screens as it flows through the described pipe system is situated above the settling or mixing boxes. One edge of this distributing box rests on top of the four mixing boxes, which are in each individual case separately and independently constructed. The distributing box is an ingenious affair, very simple, made out of cypress lumber about 18 inches wide and 20 inches deep, so constructed and arranged that the fine stock, finely screened, which flows from one screen can be regulated, distributed and caused to flow into either one or more of the settling or mixing boxes, and likewise the coarse stock, coarsely screened, which comes from the other screen can be regulated, distributed and caused to flow into either one or more of the settling or mixing boxes, the whole arrangement being under perfect control of the machine tender by means of small adjusting gates which control the pulp perfectly. Thus it will be seen that by means of this distributing box McDougal (or his workman) can, when his machine is running with four cylinders, direct the fine stock, which is finely screened, into the mixing boxes which supply and feed the two outer vats from which the two outer sides of the sheet of paper are formed, and by the same distributing box and means for adjustment the coarse stock, coarsely screened, can be directed into the mixing boxes which supply and feed the vats which form the inner layers of the sheet, thus producing a sheet of paper as every paper maker wants it. Again, if it is desired to operate the paper machine on a lighter grade of paper, using three, or perhaps only two cylinder molds for forming the sheet, the distributing box can in the course of a few moments be set by means of the adjustments already described, and the stock, coarse or fine, can be regulated, distributed and caused to flow into either or any of the mixing boxes desired, making paper with two, three or four cylinders and placing the power in the hand of the machine tender to conduct fine or coarse stock into any one or more of the vats to suit any and all kinds of paper it may be desired to make.

* * *

The arrangement of the distributing box on that machine is as complete and operates as perfectly as any I have ever seen. As I told you, it is very simple, and any millwright of medium skill and ability ought to be able to construct it. The mixing boxes are very common, the sides and bottom being made from 3 inch and the partitions of 2 inch cypress lumber, about 2 feet deep by 4 feet wide, supplied on the inside by the usual overflow partitions and sand settling pockets. Each box has a wash-out valve in it. At the outlet hole, where the pipe connections are, a box is framed around the orifice; the box is about 12 or 14 inches high from the bottom of the mixing box, and is thus made to avoid drawing directly from the level of the bottom of the mixing box, thus giving the sand a chance to settle without being drawn through the pipes into the vat. You may laugh at the idea of sand still being in the stock, and especially so after having passed through the screen and settling box, but this is nevertheless true, and I have known sand to be in the bottom of the vats many times when the latter were cleaned, even though the stock had been screened and passed through the regular settling or mixing boxes. You will remember that in my last letter I spoke of the trouble which Marion was having with one cylinder mold and vat seemingly drawing stock away from the other; you will also remember that where this was the case the vats were drawing from one single settling or mixing box, and one cylinder mold vat could not be controlled without affecting the other. Now, in McDougal's mill the mixing boxes and vats were constructed as described for the express purpose of regulating and controling each separately and to avoid the trouble of which Marion so bitterly complained, namely, the drawing away of stock from one cylinder mold by that of the other, and I am pleased to say that this does its work very well and accomplishes the purpose for which it was intended.

* * *

Before closing this letter I wish to draw your attention to the fact that the tops of the first two cylinder mold vats were set about 12 inches higher than the two which were next to the machine, and the tops of the settling or mixing boxes were about 10 inches higher than the tops of the first two vats, and the screens were set enough higher than the distributing box to give a free flow of the stock in passing from the one to the other.

JOHN.

A power plant on the upper waters of the San Gabriel River, California, is shortly to be constructed for the purpose of furnishing electricity for power and other purposes for use in the Azusa Valley. There will be 30,000 feet of 6 foot cement tunnel through a mountain cliff, from which the water will fall 400 feet into the cañon below. The work is estimated to cost $250,000, besides the power and electrical machinery. The machinery is to be in operation within a year. The aim of the projectors is to locate manufacturing enterprises in that locality to use all the power.

Correspondence.

Fox River Valley.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., April 9, 1894.

The result of the city election in Appleton last week far exceeded expectation. The entire Republican ticket was elected, and the city council's complexion was changed so as to stand six and six, with the Republican mayor to give the casting vote. Superintendent Peter R. Thom, of the Kimberly & Clark Company, is mayor; Superintendent Thomas Pearson, of the Atlas Paper Company, is returned as alderman, and Architect G. W. Orbison is also elected alderman. The new council goes in to-morrow night, when Mayor Thom will outline his policy for the coming year. John Strange, of Menasha, made a gallant fight for the mayoralty of this city, but was defeated.

Col. H. A. Frambach, of the Badger Paper Company, of Kaukauna, says that the announcement made in some quarters that his company would build a large board mill at Quinnesec, Mich., this season is rather premature. The Badger people, he says, have had the project in mind for some time and will ultimately carry it out, but do not think that the business outlook warrants it this year. When they do embark in it it will be upon a large and perfectly appointed scale. The product will be box and coated boards.

The Badger department of the National Wall Paper Company is now closed down and will remain so at least until next fall. The trust is concentrating its manufacturing business in the East.

The Wolf River Paper and Fibre Company last week awarded the contracts for the machinery of its new mill at Shawano to W. M. Mills, vice-president of the Dayton Globe Iron Works Company. The contracts call for four 60 inch and two 30 inch water wheels of the new American pattern, together with driving gear, and four of the No. 1 Mills pulp grinders.

The Badger Paper Company has also placed an order with Mr. Mills for two 30 inch new American wheels for its pulp mill at Quinnesec.

A meeting of the Falls Manufacturing Company, of Oconto Falls, will be held this week, at which a final decision will be reached regarding the proposed building of a paper mill in connection with the present sulphite mill. It is confidently anticipated that the matter will be favorably considered and that work will begin at once. It is probable that a 12 ton mill will be decided upon, to be equipped with a 110 inch Fourdrinier of the greatest drying capacity in the West, to make manilla paper. The company, if it builds, will put in the best machinery to be had and construct a model establishment. It is understood that at the forthcoming meeting a reorganization of the company will be effected and several new stockholders admitted.

Railway receipts of pulp wood by the Pulp Wood Supply Company have now been completed for this season, and the yards of the various mills in the valley are fully stocked. The receipts aggregate 120,000 cords. As soon as the navigation season opens and the boom at Long Tail Point is ready, receipts by water will commence for next season's supply and transshipments made from the Point to the mills by rail.

It is expected that the new machine of the Shattuck & Babcock Company at De Pere will be started some time next week.

Robt. Pride, who has for several years been making wood pulp in a leased mill in Appleton, has leased the old Union Pulp Mill at Kaukauna, and will remove his four grinders there to continue the business.

Wesley Guie has resigned the position of superintendent of the mills of the Combined Locks Paper Company, and the place has been accepted by S. R. Wagg, for several years superintendent of the mills of the Fox River Paper Company in Appleton. The change will occur on the 20th of this month. Mr. Guie goes to a mill in the East. Mr. Wagg's successor is not yet announced.

The Paul Paper Company, of Menasha, has awarded a contract for a 300 horse power compound condensing steam engine, which it expects to install in about a month. A new engine room is now being constructed for it.

The Gilbert Paper Company, of Menasha, has removed the 100 horse power engine which ran its paper machine to the engine room, where, water power being now largely increased, it will enable the big steam engine to be shut down.

The new mill of the Plover Paper Company on the Wisconsin River was successfully started a week ago. It will make

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about 7 tons of engine sized flat and supercalendered book paper a day.

David Horkman is now associated with H. E. Wambold in the business of the Appleton Screen Plate Works., Willis Babb having disposed of his interest.

The mill of the Kaukauna Paper Company is now running full upon manilla papers, the remaining machines having gone into operation last week.

The Riverside Fibre Company, of Appleton, is greatly enlarging the capacity of its chip bin by building an addition on the roof over the digester house.

C. H. Dobilinski, of Philadelphia, arrived in the Valley last evening.

F. J. McGovern, of East Aurora, N. Y., is visiting the trade here.

Thomas Latimer, of Wilmington, Del., is interviewing manufacturers about machinery.

John S. Van Nortwick has gone to Hot Springs, Ark., for a couple of weeks' rest from business.

The sudden death last week of Mrs. A. L. Smith, mother of General Manager A. L. Smith, Jr., of the Manufacturing Investment Company, was a great surprise and shock to Appleton friends.

John De Varennes, of Spring City, Pa., is visiting in Appleton. It is possible that he may be retained in this city.

W. E. Knight, of New York; H. C. Rice, of Dayton, Ohio, and W. S. Morehouse, of Seneca Falls, N. Y., have been recent visitors to the trade in this valley.

John McNaughton was slightly injured last week by his carriage being run into by a runaway team on a bridge in this city.

FOX RIVER.

Miami Valley.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, April 12, 1894.

Business in the paper trade is moving along at the same old trot. R. G. Dun & Co.'s report may show a gradual increase in other branches of industry, but there is little to be noted in the great paper trade. It seems rather remarkable that the weather should affect the paper trade, but there are too many members of the trade who affirm that it does for me to dispute it. In that event the variety of weather in this section adds a spice to the business; but how about the mill men in faultless climes? Nice weather in the Miami Valley brings a spurt of orders, but a week of disagreeable influence causes a relapse such as the spring clothiers experience.

There is little doubt that the newly erected straw paper mill of the Weston Paper Company at Greenfield, Ind., is one of the most completely equipped in the trade. Behind the project are a number of Dayton gentlemen. In fact, nearly all of the stockholders are Daytonians, including such sturdy pillars of the local business world as Dr. P. N. Adams, J. K. McIntire, John Harries, E. B. Weston, &c. In all probability the location of the company's mill at Greenfield, which is a hustling town of something like 5,000 or 6,000 population, may result in the addition of several other kindred or allied industries. For instance, the Weston Paper Company has a contract for a specialty paper, covering a period of five years, and the people manufacturing these specialties desire to have their plant near the source of production of their raw material. It is understood that this firm will engage 100 employees and that the new manufactory is only a question of time.

The buildings of the Weston mill are neat and convenient, and are a credit to the city. The sizes of the different rooms in the buildings are as here given: Two story rotary room, 24x82; beater room, 40x80; machine room, 34x196; stock room, 34x60; first engine room, 18x30; second engine room, 18x30; boiler room, 40x60; pump room, 12x20; mixing room, 10x20; lime room, 12x20; straw cutter room, 12x14.

Two monster engines fed by steam from four boilers, propel the machinery of this plant, using 1,000 feet of shafting and 2,000 feet of belting. The engines are the latest improved, one, a 250 horse power, propelling the straw cutter, elevators, carriers, rotaries, beaters, &c., and the other, of 100 horse power, furnishing the motive power for the paper making machinery, *i. e.*, the machinery handling the pulp after it assumes the form of paper. The steam pump furnishes about 40,000 gallons of water daily and the entire plant finds a sufficiency. The pulleys used throughout the mill are all first class, placing the machinery under complete control, so that speed may be diminished or increased as the exigency demands. In this particular the mill is very thoroughly equipped.

The machinery is all new. The present capacity is 24 tons per day (20 tons of finished product), but it is the intention of the company to double the capacity in time. In its entirety the plant cost over $110,000, about $10,000 above the estimated figures, and at present has a working force of over eighty, giving a total annual disbursement to workingmen of Greenfield of over $35,000.

It is likewise rumored that the Weston Paper and Manufacturing Company, of Dayton, contemplates removal to Greenfield, inasmuch as Mr. Weston desires to centralize his interests in order to facilitate shipments and to conduce to general convenience. However, this cannot be vouched for. It is to be hoped that Mr. Weston will remain in Dayton in conjunction with his several business enterprises. His "Columbia" and "Climax" rolls have gained a widespread reputation, and his factory is an important one in Dayton's list of manufactories.

In the case of the Market National Bank *v.* Chas. M. Harding, the Franklin paper manufacturer, et al., Madison J. Hutchinson has been appointed receiver of the C. M. Harding estate. His bond was fixed at $12,000, and he has qualified for the trust.

The Franklin Paper Company has been engaged in elaborate improvements of late by the construction of several filterers. Thus the water used by the mill will be free from contaminating or obnoxious substances. The pond furnishing water has been drained and dredged, and two flumes have been constructed for the passage of the water into the mill. When one of the flumes demands cleaning the supply may be obtained through the other box or flume, avoiding a shut down. A large force of men was employed in making this convenient and profitable improvement, and the mill was not compelled to close for a considerable period during its progress.

A. Aldrich, of the Beloit Iron Works, Beloit, Mich., called on the trade in this section during the past week.

Frank Nixon, managing partner of the Nixon Paper Company, of Richmond, Ind., and formerly of Dayton, was in the city this week picking up stray orders. Morris Nixon, his brother, also "drummed" the trade this week.

Charles Whealen, district manager of Ohio for the American Strawboard Company, reports trade very good among the mills at Tippecanoe City, Lima, Kenton, Tiffin, Circleville and Dayton, all of which are running.

A serious explosion took place at the Weston Paper Company's plant at Greenfield, Ind., last week. As is well known, this mill is run by gas. A quantity of the subtle fluid accumulated under the boilers and exploded with a loud report early in the morning. The roof of the boiler room was blown off, the stack was completely dismantled, the boilers were displaced, foundations were shaken, water gauges and pipe connections were loosened, the force of the shock being felt very forcibly all over the mills. It is supposed that the loss will not amount to more than $500, in so far as repairs, &c., are concerned; but the shut down incident to the blow-up entailed an incalculable loss. A big force of workmen was at once set to work and repairs were hastily made. The mill is now running full.

This was the company's first experience with gas and it was not relished in the least. This company controls a valuable tract of gas land located in the richest region of the famous Indiana belt.

It was stated in last week's letter that P. J. Sorg, the millionaire manufacturer, would not accept Congressional honors. At the last moment, when the convention was in the throes of despair, he authorized the use of his name and he was unanimously nominated. Mr. Sorg is particularly well known in the paper trade and is somewhat interested therein. His right bower is Thos. M. Boyd, trustee of the Louis Snider's Sons Company, of Hamilton.

B. F. Reist, formerly of the Mead Paper Company, is now located in Tyrone, Pa., and is connected with the Morrison-Cass Paper Company. Mr. Reist removed his family thither this week. M. V.

Northern New York.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., April 13, 1894.

Not as the beggars come to town "in rags and jags," but in the palatial Wagner car "Pilgrim," came the wealthy New Yorkers who are interested in the multi-millionaire syndicate, the International Pulp Company. W. J. Arkell, proprietor of *Judge* and *Frank Leslie's*; Col. A. G. Paine, Alfred Rindskopf, Thomas Bayard and son, all of New York, were in the party. Superintendent Russell of the R. W. & O., accompanied them. The gentlemen came to attend the annual meeting of the International Pulp Company, to visit the talc mines and to consummate the company's deal with the Asbestos Pulp Company.

The International, by virtue of this new accession, is in a position to monopolize the trade, and the cut in prices will be done away with. Prices will not be raised any in consequence of the monopoly, as the company proposes to facilitate its process of manufacture, so that the expense will be greatly diminished. It is the policy of the company to introduce improvements which will tend greatly to raise the standard of its product. Colonel Paine stated that he thought the demand would be doubled during the next year, and that talc would eventually replace all other filiers for paper. The lately acquired asbestos plant is to be remodeled and equipped with all of the modern improvements. The asbestos and also the other mills are to be operated separately for the present, but the main object of the company is to combine its several water powers to operate one monster mill.

The Jason Jeffers farm, in Fowler, of 386 acres, including a water power of 47 feet head, has been purchased by the International Company for $12,000. Houses for the company's employees will occupy a portion of it.

At the annual meeting the directors of the company elected for the ensuing year were: Col. A. G. Paine, H. Walter Webb, W. J. Arkell, Alfred Rindskopf, Chauncey M. Depew, J. Touro Robertson, Louis C. Fuller, Geo. H. Daniels, Thomas L. James, Edgar Van Etten, Thomas W. Bayard, John A. Manning and John A. Welch. From the complexion of the board one can see at a glance that it is a New York Central body.

It is rumored that other talc mills will be erected and operated this summer in the town of Edwards, where some of the best talc mines to be found in this part of the State are located. These were formerly worked by the Agalite Fibre Company, whose lease expired a year ago, and since then the mines have been unworked. A. L. McCrea has leased a part of the property and Dr. F. Sprague another portion. As both of these are outside of the syndicate there is a possibility that the International's monopoly will not be of long standing, unless it buys out the new company.

L. D. Brown, employed in the Frontenac Paper Mills, is an applicant for the postmastership of Dexter. He ought to have the place.

James Mackey, employed in Remington's paper mill, had the cord in his right hand index finger severed last week and Robert McIvoy, of the same mill, had the middle finger of his left hand smashed.

Henry Finnigan, of Brownville, employed at the Ontario Paper Mill for the past three years, died last week of typhoid fever.

L. M. Gardner, the well-known talc magnate of Gouverneur, has mated his costly "Flying Cloud," and now has a splendid pair of chestnut beauties.

The sensation of the week at Watertown has been the theft of a quantity of valuable brasses from the paper mills of the Taggart Brothers Company. Over 1,000 pounds of brass were at first missed from the paper mill at Felt's Mills, and since then it has developed that $1,000 worth of valuable pieces of brass have been removed from the machinery in paper mill in this city. The thief has not been discovered, although George Bargedorff, a former employee, has been arrested on suspicion of being at least implicated in the Felt's Mills robbery. The police are of the opinion that he knows something of both robberies. A box of brass was discovered in the woods between Black River and Felt's Mills, and the police were notified, but upon reaching the place the brass had disappeared. Wagon tracks were visible, however, and it is the assumption that Bargedorff carted it in his wagon to Watertown and sold it, as he was absent from the mill on that day. Bargedorff claims, however, to have bought the brass from John Gilbo, thinking that the latter had picked it up about the mill, and that it had been thrown away by the paper company as useless. Two brass cylinder rollers, one solid brass roller weighing 500 pounds and a large roll of brass screen were among the things stolen.

The case of the Jefferson County National Bank against the Brownville Box and Paper Company, which is now in the hands of a receiver through the bank's action, was on this week. The trouble now is over a bill of E. C. Emerson, the legal adviser of Receiver R. H. Huntington. The company objected to the bill, which amounted to $398.65. The report of the receiver of the company cannot be confirmed unless these fees are paid. One particular item in Judge Emerson's bill, which the company's attorney objected to, was a charge of $10 for accompanying Receiver Huntington to Crownville to secure a book. The matter was referred to Harold L. Hooter to take proofs in reference to the claim and report the evidence. W. E. T.

Western New York.

[FROM OUR REGULAR CORRESPONDENT.]

LOCKPORT, N. Y., April 12, 1894.

The water in the Erie Canal has been reduced to a minimum this week, shutting off the power of the pulp and paper mills along the Eighteen Mill Creek, which is fed from this source. As a result the mills which are not wholly shut down are running by steam power or are availing themselves of this opportunity to make repairs and additions to their property.

The Cascade Pulp Company which supplies the United Indurated Fibre Company with the raw material is making extensive additions and improvements, necessitated by the increased demands made by the fibre company. A quantity of new machinery will be introduced and the output will be increased at least 33 per cent.

Several important changes which are being made at the Lockport Paper Company's plant will tend to increase the output of that mill greatly. The growing business of the company has led to the building of an extensive addition, which it is hoped by considerable pushing to complete this month.

The Niagara Paper Company will clean up and make some repairs. Its secretary and treasurer, William H. Case, was elected

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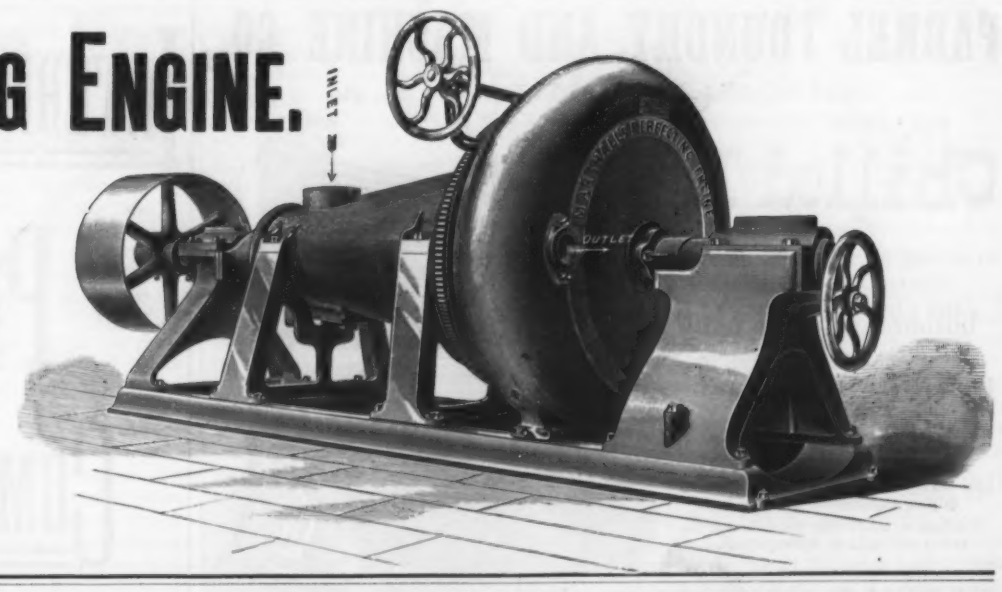

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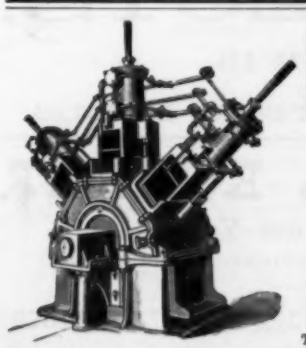

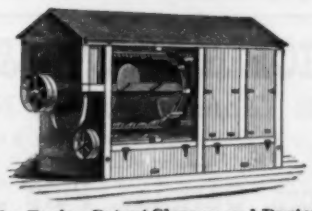

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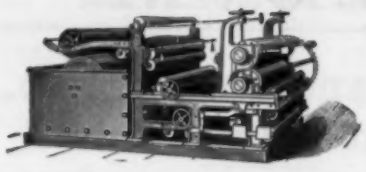

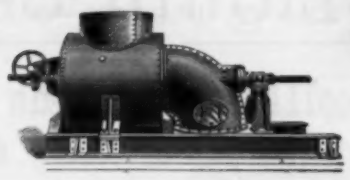

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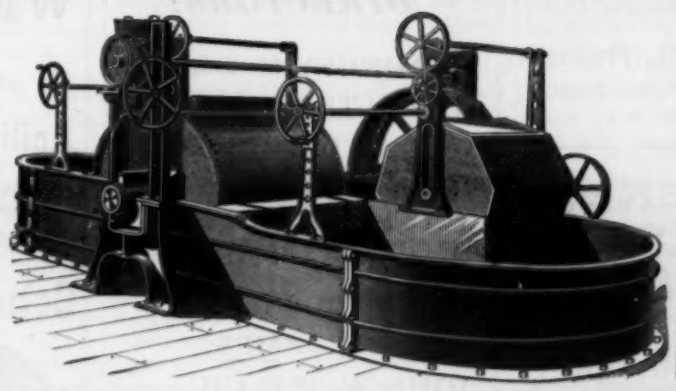

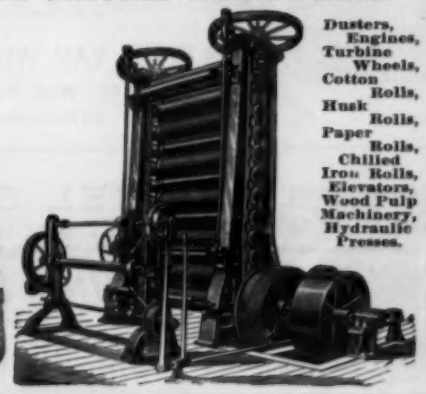

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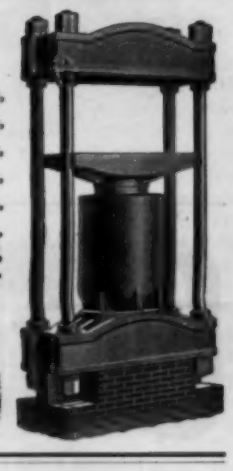

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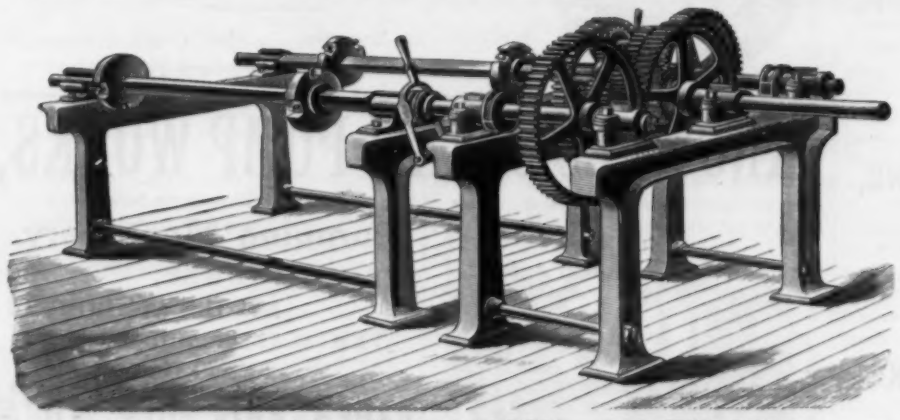

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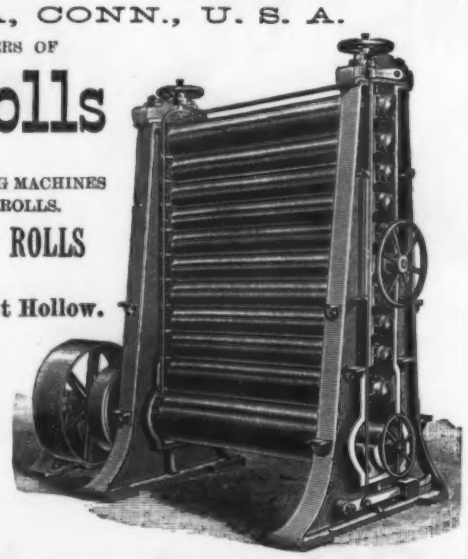

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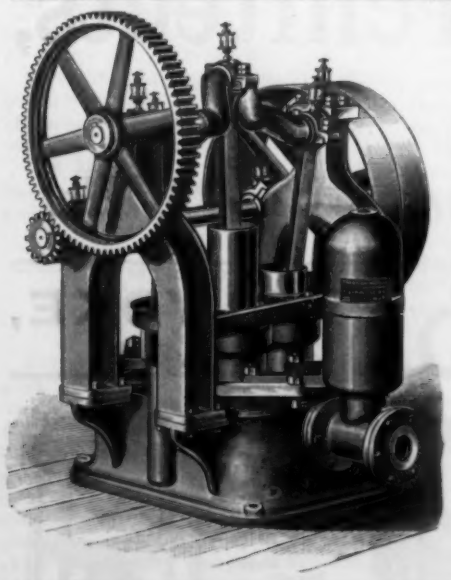

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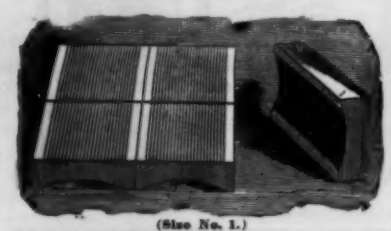

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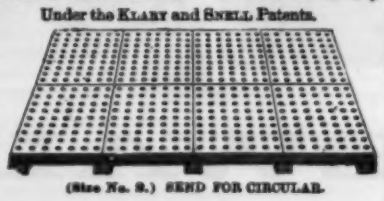

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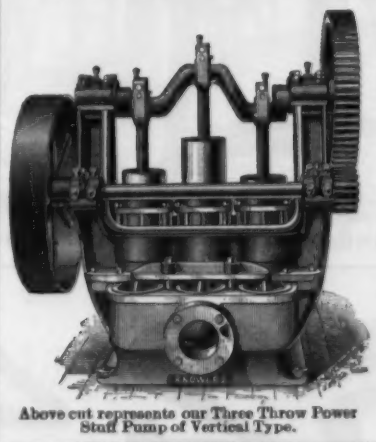

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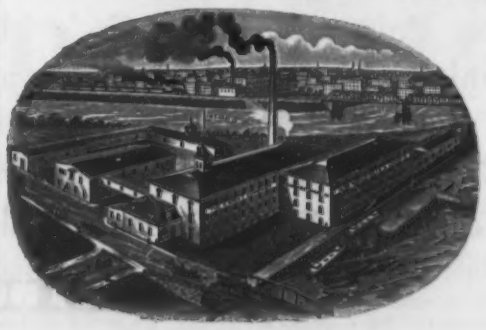

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alderman in the Third Ward on Tuesday by a handsome majority.

The pulp mills are all closed down, and will be put in first-class shape for the summer's run this week. Superintendent Eihlers has charge of all three, and is doing clever work.

The affairs of the James Jackson, Jr., estate and of J. Carl Jackson, the chief executor, are in a deplorable shape. Young Mr. Jackson took his father's place in the Lockport Pulp Company, the Lock City Pulp Company, and the Niagara Pulp Company as vice-president of the various companies. The creditors of the late Mr. Jackson's estate, numbering between 125 and 150, have petitioned the court for an investigation, alleging that J. Carl Jackson has been managing the estate for his personal benefit, and that the creditors were going to get left. They alleged fraud and said a number of unpleasant things. Judgments have piled up against young Mr. Jackson in large numbers, and also against the Jackson Lumber Company, which owns the Niagara Pulp Company's plant. The largest of these is that filed by E. Ashley Smith, Mr. Jackson's brother-in-law, against the lumber company for $81,632.87. This is supposed to protect the family interests.

William and Frank Trevor, of the Trevor Manufacturing Company of this city, have been awarded a patent on a barking machine to be used in pulp mills.

It was a gallant fight which Jesse Peterson, president of the Indurated Fibre Company, made for mayor last Tuesday in the municipal election. The greatest odds were arrayed against Lockport's progressive citizen, but he was only beaten by a little over 100 votes. W. E. T.

Holyoke.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., April 12, 1894.

The paper trade is entirely devoid of features this week, and very little can be said as to its condition. Business is inclined to be "jerky," pretty fair one day and very dull the next. The movement of finished goods is not very brisk and orders are not lively, by any means. The mills are making very few changes in the running time, and everybody is obliged to take matters philosophically.

Prices are unchanged, and are likely to be for the present. There is very little said as to an upward tendency in prices, and the movement, which was referred to recently to start the ball rolling, has not materalized. Any development in this direction must be unanimous or nothing will be accomplished. The stock market shows very little change. Foreign rags are not in demand, and domestics are not very lively. Prices are unchanged.

The envelope manufacturers in this city and vicinity are naturally very much interested in the Government contract for making stamped envelopes for four years from October 1. The very low bid of James Purcell is not looked on favorably by those most interested. His figures—$692,620—are at least $300,000 below the price paid up to this time, and this cut in the contract price is looked on with suspicion by the manufacturers who are the owners of large and expensive plants. The Plimpton Company, of Hartford, for instance, has a plant valued at $400,000, and the Morgan Company's establishment, at Springfield, is worth nearly as much. In case these companies, which have of late years worked together in bidding, lose the contract it will mean a decided decrease in the output, and the working force will have to be cut down. Purcell, it is said, has no connection with any company and owns no plant, and no one can see why he should be awarded the contract.

John Harrighy, of Chicopee, the son of a policeman in that city, has been arrested on suspicion of having attempted to wreck the two trains on the Boston and Maine Railroad near Willimansett recently. Young Harrighy had a preliminary hearing this week and was placed under $1,000 bonds to appear for a future hearing. The punishment in this State for a crime of this nature is a fine of $500 and imprisoment for one year. The nature of the evidence against the young man is not known.

The lockout at the George R. Dickinson Paper Company's mill shows very little change. The would-be strikers are idle, but the mill is running much as usual. The managers have had very little trouble in filling the places of the malcontents and orders are being filled as usual. The machine tenders are determined to hold out and they think that the company will finally have to come to their terms, as the new help is an expensive luxury.

The "Kamp Komfort Klub" minstrels, composed of many young and middle aged men connected with the paper trade, gave two very enjoyable and meritorious performances at the Holyoke Opera House on Tuesday and Wednesday evenings, for the benefit of the City Hospital. The audiences were large and representative, and the hospital fund will be increased by several hundred of dollars. Mr. Whiting contributed the use of the Opera House.

William Skinner, Jr., has been elected president of the City National Bank to succeed the late Timothy Merrick. Mr. Skinner is the eldest son of William Skinner, the well-known silk manufacturer, and is associated with his father in business. H.

Boston.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, April 12, 1894.

During last week your correspondent had occasion to vary the monotony of metropolitan life by visiting some of the paper making towns of the old Bay State.

Massachusetts has the proud distinction of being second of the paper making States of the Union, coming next to New York; but in fine, high grade papers this State leads the whole country, with a daily capacity of nearly 225 tons, almost twice as much as is produced in all of the other States.

One of the companies of the State contributing to this result is the Keith Paper Company, located at Turner's Falls, whose daily capacity is 11 tons of writing paper.

Judging from surface indications the Keith Paper Company is certainly in a flourishing condition, although its business, in common with most of the writing mills, suffered to some extent during the recent depression.

For a year or more the company has been erecting a new mill, which will be finished in few months, and when completed it will be the best constructed paper mill plant in this country.

Under the guidance of C. M. Burnett, treasurer of the company, the writer made a tour of inspection through the new mill from rag room, under the roof, to the wheel pit, and so solid is the structure that it would seem that nothing short of an earthquake could disturb that mill.

Every modern appliance of merit, from Warren filters to the "Paul" system of steam circulating, will be introduced into the new mill, the Warren filter system, with a daily filtering capacity of nearly 3,000,000 gallons, being now set up and near completion.

The "Paul" system is even now in operation on one of the paper machines of the mill now running, and orders have been given to equip the new 80 inch machine in the new mill with this "Paul" system.

So much interest seems to centre in this "Paul" system of paper drying that I always feel like looking into the merits of this invention when opportunity presents.

Concerning the technicalities, internal working and construction of the "Paul" system of steam circulation for heating and drying purposes nothing has been written, nor are such descriptive articles likely to appear if one depends upon Andrew G. Paul, the inventor, to furnish the data and material for such a write-up. Mr. Paul himself says very little; not that he is not fully conversant with every pipe and valve and with every detail of construction and with every principle embodied in the system, but for fear of overstating the claims of his invention he says nothing, and instead of talking points to the system in operation and advises people to confer with those using it for information concerning its value and the results obtained.

So, finding the "Paul" system in use at the Keith Company's mill, I made some inquiries concerning its working.

From the fact that Mr. Burnett, after noting for two months the results secured, has given orders to place the system on his new machine in the new mill one is forced to admit that he is pleased with the efficiency of Paul's method of drying.

Mr. Putnam, the superintendent of the mill, watches the results very closely, and the many diagrams from the recording gauges, which he showed, tell a very favorable story.

One of these recording diagrams from the machine running twelve hours on one grade of paper showed that the temperature did not vary 1°. Another diagram showed the results of a steady twenty-fours' run without any variation in the temperature. So completely is the tempature controlled that the paper machine might be run steadily for a week or two without the slightest variation showing on the diagram.

The Turner's Falls Paper Company has also the "Paul" system in operation. This company runs an 84 inch Fourdrinier machine with fourteen dryers, producing about 8 tons of high grade news paper a day. Mr. Everett, treasure of the company, kindly conducted me over the mill, pointing out features which might escape the notice of the ordinary observer. Mr. Everett could not say too much for the "Paul" system, which he has had in operation since last July. In regard to the saving in coal Mr. Everett was not prepared to state definitely, although satisfied that he was making a good saving. Going to the boiler room, Mr. Everett stated that formerly he ran his three boilers, while only two have been required during the past winter, and that was a saving not only in coal but in the wear and tear of a boiler. Besides having the system on his paper machine Mr. Everett has it applied to the heating circulation of the mill plant and to the heating of his residence also, and the steam is circulated at the atmosphere. To say that Mr. Everett was satisfied with the results hardly expresses his real opinion of the value of of the system; he is more than satisfied and is prepared to give it his indorsement at any time.

Before leaving the mill I looked up Superintendent L. E. Failes, and I said to him, "What is your opinion of the 'Paul' system?"

"Well," said Mr. Failes, "it is the very best thing ever put into a paper mill, and I would not have it taken out under any consideration whatever. The system works perfectly, it has never given any trouble, dries the paper uniformly and perfectly, and since it was put in we have speeded up the machine about 30 feet a minute. It is certainly a valuable device for any paper mill." With eight months' experience with the "Paul" system, Superintendent Failes ought to know what he is talking about.

At the mills of the Montague Paper Company everything seemed to be running to full capacity; but the company is not crowding its fine machines, as business does not warrant it. Some 34 tons of paper, book and news, and about 24 tons of pulp per day was the present product, as stated by Mr. Farwell, the superintendent.

W. D. Russell, vice-president and treasurer of the company, was seen, and he said that business was not "booming," although his company was fairly busy. The company is preparing to make some improvements. One machine room will be reconstructed, new foundations, a new floor and new roof will be put in, and a new 120 inch machine will replace a 62 inch machine now running. It is quite probable, judging from certain things coming to notice while in the mill, that this new machine will be equipped with the "Paul" system.

On my return from Turner's Falls I stopped over at Fitchburg and spent a very pleasant day in that enterprising city.

Fitchburg has about 25,000 inhabitants, and it is a city of which its people are justly proud—a city which owes much to the public spirit of its enterprising manufacturers, among whom may be mentioned the Hon. Rodney Wallace, of the Fitchburg Paper Company, and the Hon. George F. Fay, of Crocker, Burbank & Co., who have donated elegant public buildings to the city.

As a paper making centre Fitchburg occupies a prominent place. Seventeen paper machines are in daily operation turning out over 100 tons of paper, including book, news, music, coated, card middles and manillas, lithograph and hanging papers.

Located in Fitchburg also are manufacturing enterprises catering to the needs of paper and pulp makers.

One of these is the Union Machine Company, which manufactures paper mill machinery. At the present time business with this company is reported to be quite good, the shops being run full time, ten hours a day, and the working force increased. Emmons Crocker, manager of the company, is now at the Sandwich Islands, having gone from Fitchburg with a Raymond excursion party last February, leaving the excursion to visit the islands. Mr. Crocker is expected to rejoin the party at San Francisco and to return home by the latter part of May.

Another Fitchburg concern to report good business was that of Hardy & Pinder, manufacturers of screen plates. Mr. Pinder retired from the firm last August on account of poor health, the business being now carried on by W. A. Hardy, who bought out his late partner's interest. Mr. Hardy is one of the oldest screen plate makers in the country, and his screen plates are very widely distributed among the paper and pulp mills of the country. During the dull times of last year Mr. Hardy says that his shops were run full time, his several workmen making a full month's overtime during last year. His shops are well equipped with every appliance for the production of screen plates of superior workmanship, and his books carry orders enough to keep him busy for several weeks to come.

Did space permit mention might be made of several other Fitchburg firms connected with the paper making industry, but I must draw my notes of last week's tour to a close and give passing notice to Boston events.

Concerning local trade there is little to be said this week, things moving along in a quiet way without much worry.

Charles A. Dean, of the Hollingsworth & Whitney Company, returned last Saturday from Florida, where he has been since February. Mr. Dean looks as though his Southern sojourn had been pleasant and enjoyable, but he got back to Boston just in time to catch the severe snow storm and blizzard raging since last Sunday.

E. C. Rogers and O. H. Greenleaf, of Holyoke, were in town to-day attending the quarterly meeting of the Paper Mill Mutual Fire Insurance Company, of which concern they are directors. This company is reported to be carrying risks of $5,000,000.

Other recent trade visitors were J. Fred. Webster, of Bangor, Me.; C. R. Milliken and Chas. H. Milliken, of Portland, Me.; Geo. O. Guild, of Bellows Falls, Vt.; W. C. Benton and W. N. Eaton, of Lee, Mass.; Chas. S. Barton and J. Henry Whitcomb, of Worcester, Mass.; Mr. Caldwell, Mr. Taylor, Mr. Bolt and Moses Newton, of Holyoke, Mass.; Chas. Callendar, of Glendale, Mass.; O. H. Briggs, of South Hadley Falls, Mass.; Mr. Daniels, of Adams, Mass.; W. H. Godfrey, of Lynn, Mass.; Herbert I. Wallace, of Fitchburg, Mass.; A. Brainerd, of Hartford, Conn.; Benjamin M. Jackson, of Pawtucket, R. I.; Mr. Amadon, of Lancaster, N. H.; W. J. Morton, of Portland, Me.; Mr. Sawyer and W. E. Farrell, of Philadelphia, Pa.; T. E. Barnes, of Plantsville, Conn.; I. C. Blandy, of Schuylerville, N. Y.; Mr. Plumb, of Newark, N. J.; H. M. Kitchell, of Bayonne City, N. J.; H. G. Bixby, of Nashua, N. H.; William Finlay, of Newton Lower Falls, Mass.; W. J. Warren, of West Dudley, Mass.; John F. Wall, of Norfolk, Mass.; Albert Salomon and A. Salomon, C. A. Whedon and Ed. Watson, of New York.

Boston, in common with the remainder of the country, is having quite a lively winter storm this week. DELESDERNIER.

Great Britain.

[FROM OUR REGULAR CORRESPONDENT.]

LONDON, England, April 3, 1894.

Things are a little better all around than when last I wrote. This doesn't by any means say that trade is in a brilliant state; but paper men are not grumbling so vehemently as a month or so ago, and there is really a little doing. The barometer of the general trade of the country is undoubtedly rising. The percentage of unemployed is gradually, very gradually decreasing, and the brighter lookout is making us a little more cheerful. There are pretty large stocks, especially of heavy papers, to be cleared away in some quarters, but merchants are looking at them hopefully and predicting that the better time coming will clear them off. Just at present, too, we are without labor troubles of any importance, and masters and men seem equally anxious to avoid them. A big strike in coal, iron or cotton plays the deuce with the paper trade.

In this connection it is worth mentioning that the big engineers, Mather & Platt, of Manchester, have come swimmingly through their first year of eight hours a day of work and have published details of the experiment. The firm employs over 1,200 hands, most of whom are skilled workmen. The conditions under which the trial was made were far from favorable. The industrial depression had the effect of lowering the prices of the machinery turned out, and as the number of orders executed reached the average of the preceding six years—with which the comparisons are made—and the wages remained the same, the results are all the more startling. In the preparation of the report the greatest possible care has been taken to render the trial a perfect test for the whole engineering and machine making trade. No monopolies of any kind have been included and all royalties on special inventions have been deducted, so that every element which might render the experiment doubtful in its general application has been eliminated.

It is important, also, to note that no overtime except for breakdowns and repairs has been worked, and extra pressure has been met by the employment of extra men on the double shift plan. The new system was begun on February 20 last year. The time table provides for the morning work to run from 7:45 to noon, when there is an hour's interval for dinner; the second stage being from 1 o'clock to 5:30. This is not exactly an eight hours day, but gives eight and three-quarter hours from Monday to Friday, while on Saturday the shops close at noon, after four and a half hours' work, bringing the total up to forty-eight hours per week.

An examination of the books shows that in the trial year the rates of wages to turnover bore a slight increase of 0.4 per cent. as compared with the average of the six preceding years; but it must be remembered that as in the year selling prices were considerably lower, the actual quantity produced was considerably larger than the average, for the turnover was practically the same. Hence had prices ruled the same the turnover in the trial year would have been greater, and the wages cost—that is the rates of wages to turnover—would have shown a decided decrease, instead of the increase of 0.4 per cent.

Other important changes have, however, occurred owing to the alteration of hours. There has been on the one hand a marked economy in gas and electric lighting, in wear and tear of machinery, engines, gearing, fuel and lubricants, and miscellaneous stores; while on the other hand must be placed increased fixed charges due to interest of plant and machinery, rent and taxes and permanent staff on fixed salaries being employed five hours less per week. It is found that the balance of debtor and creditor accounts on these expenses is decidedly favorable, and by an extraordinary coincidence amounts to a saving of 0.4 per cent. on the net amount of the year's turnover, which exactly counterbalances the debit on wages.

Another very important idea of saving has been that under the head of "lost time," which amounts to no less than 2 per cent., the "time lost without leave" under the old system being 2.46 per cent. of the whole time worked, while under the new it was only 0.46 per cent. There has been a slight loss under the head of piecework production, but it has grown smaller during each third of the year, being 1.76 per cent. in the first, 1.58 per cent. in the second, and only 0.78 per cent. in the third of these periods into which the year was divided, and Mr. Mather considers it reasonable to expect that the steady adaptation to the altered conditions noticeable in the above figures will cause even this small difference to disappear.

Among other points demonstrated by the results Mr. Mather says that the two morning hours before breakfast are not worth the pains and trouble they cost, whether to workpeople or to employers. The effect on the workpeople must be damaging, both mentally and physically; "otherwise we cannot account for the remarkable and indisputable fact that when these hours were struck off as much work was performed all the year round as when these hours were employed. Not only are these two hours before breakfast almost worthless as time, but their effect on the physical and mental condition of the men is to depreciate the vigor, freshness and brightness which ought to prevail throughout the working day if the best results are to be obtained."

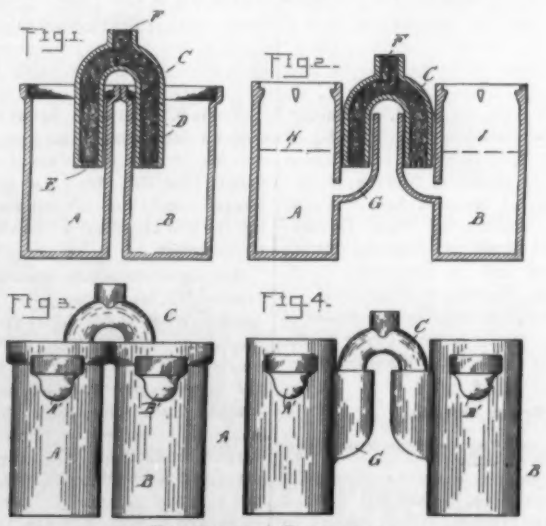
Other points well put by Mr. Mather may be quoted: "The changed home life must count for something. Every man can now associate with his family before leaving for the day, and the breakfast table may give him a good send-off in a cheery spirit, which he maintains in all he does. The total abolition of overtime, excepting in the rarest cases, is essential to the success of the shorter hours if the conclusions as to the increased production be correct. This custom is a delusion on the part of workmen and employers alike. The extra wages are obtained by the men at too great a cost The extra work is not worth to the employers the price they pay for it." In conclusion, Mr. Mather says: "One year's trial has convinced us that we have found the happy medium in the number of hours, during which only one meal and one stoppage are needed, and this resolves itself into the eight hour day or forty-eight hour week."

A well-known Scottish paper maker, W. Smith, of Denny, has been over to your side and is very favorably impressed with the Holyoke Mills. The writings and printings are not so good as ours, he thinks; the news is better. In labor saving machinery, such as appliances for carrying rags and stuffs from one department to another, he thinks that Holyoke is ahead of us, and it undoubtedly is ahead of our average mill; but many English mills (Dickinson's and Lloyd's, for instance) are excellently equipped in this way, and have adopted every possible labor saving dodge.

As you took some figures of wages paid in Scotch mills from a former letter of mine and used them as a handle upon which to hang some editorial wisdom, a little evidence of Mr. Smith on the matter will interest you, and I leave you to supply the comment. "I visited," he says, "some of the workingmen's houses, and was told the rent they pay for them is from $10 to $15 for a four room house, built of brick and wood, with a back yard or garden. These houses are very dear, as you can get a house with as much accommodation and having a far better appearance for half the rent in the old country. Speaking to a workingman's wife (a Scotch woman), I said: 'You get good wages here.' 'Yes,' she says, 'but we have just to pay it away again, as our house rents are so high; we pay $7 for a ton of coal, and we burn a lot in the winter time, as it is so cold. The clothes and boots are dearer, too, than at home, and they do not last half the time, as they are very slim got up, and we must keep a good furnished house and put on good clothes or we are looked down on here. I can't keep my house as I did at home on much less money than the double I had at home. I was as well off with $7.50 per week in Scotland or England as here with $10 per week.' They have free education in Holyoke, and all the taxes they pay in the year is $2. They have no gun tax. They pay $2 for a dog and for a bitch. They have no co-operative societies in Holyoke and very few workingmen own their own houses. Foresters' and Oddfellows' friendly societies are very strong (the American order) in Holyoke." ALFA.

Electrolytic Diaphragm.

This invention particularly refers to electrolytic diaphragms employed in the art of electrolyzing liquids, the object of which is to keep the liquids in the cathode and anode compartments from mixing with each other, as well as preventing the products of electrolysis from reuniting. Various electrolytic diaphragms devised heretofore have the drawback of limiting the capacity of these compartments, as they are more or less bulky and liable to become leaky, and the object of the invention is to construct and arrange a diaphragm which will very little, or not at all reduce the capacity of the chambers, while at the same time effectively preventing the formation of a leak between the compartments; and to this end



ELECTROLYTIC DIAPHRAGM.

it consists in electrolytically connecting the cathode and anode compartments above the level of the liquid, preferably by the capillary action of the liquid through the porous material contained in a tube or casing, the open ends of which are immersed into the cathode and anode compartments respectively, or in lateral branches formed thereon.

Figure 1 is a vertical, central section through anode and cathode compartments connected by an electrolytic diaphragm; Fig. 2 is a similar view with the parts modified; Figs. 3 and 4 are side elevations of Figs. 1 and 2 respectively.

A and B represent the anode and cathode compartments forming an electrolytic cell, which are of known construction, and contain respectively the anode and cathode.

The compartments or vessels A B are provided with lateral branches, A' B', as shown in Figs. 3 and 4, suitable for filling in or discharging the liquid or for connecting the vessels in series.

C is an inverted U shaped tube or casing and D is porous material filled in the tube or casing. To fill the tube or casing and hold the material in place therein the open ends are restricted either by a perforated partition, E, or otherwise, and the top is provided with an opening, F, through which the material may be filled in and which may then be closed if desired. This casing or tube filled with a porous material forms the electrolytic diaphragm by immersing it into the liquid contained in the anode and cathode compartments respectively, as shown in Figure 1, or by forming the anode and cathode compartments with lateral branches, G, which form sockets into which the ends of the tube or casing may be inserted and sealed with suitable cement. These lateral branches are preferably arranged as in Fig. 2, wherein they are shown to communicate with the compartments below the surface of the liquid in the compartments, which surface is indicated by the dotted lines marked H, and these branches are also extended to a sufficient height above the surface of the liquid to prevent any leak or overflow.

In practice the casing or tube of the electrolytic diaphragm may be formed of any non-conducting material suitable to withstand the electrolytic action, and which extends when in position above the height of the liquid in the compartments whereby the liquid in the two vessels is electrolytically united by the capillary action which takes place in the porous material, the latter being to this end of a suitable nature to permit such action to take place. As a porous material, asbestos, powdered glass, sand, &c., may be used, or any other non-conducting material which remains neutral under the electrolytic action and is adapted to permit the capillary action to take place and afford a suitable passage to the current. To support the porous material within the tube the ends of the tube are closed and the latter is provided with perforations.

The opening F in the top of the tube may be left open for the escape of any gases which may collect in the top and also for preventing the siphoning of the contents from one vessel into the other. In case the capillary action is not sufficiently strong fluid may be fed through the opening F to connect the two compartments.

Timber in Pillars.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY W. H. WESTON.

In mill building the general practice is to use wooden pillars or columns throughout for the support of upper floors and roofs. Doubtless wood is at the present time the best thing to employ for a number of reasons, among which may be mentioned the greater safety in resisting failure in fire, the more easy construction where used, and the adaptability for making attachments to the supports. Wooden pillars are usually of better appearance than those constructed of iron. A line of well shaped wooden columns in a mill invariably presents a neater appearance than either cast or wrought iron.

As to the value of wooden columns in case of fire it has always been shown that in serious conflagrations these will hold up their weights of floors and machinery much longer and better than iron, the latter warping or cracking, and consequently failing to support the load long before a wooden column gives way, unless the iron is protected completely by a fireproof covering. Such a covering increases the size of the columns in many cases so as to be a serious disadvantage, and also interferes very much with making attachments to the columns when desired. A column covered with fireproof material seldom makes a good appearance, but usually looks clumsy and out of place, and the covering unless put on at considerable expense is apt to get loose. The lengths of columns for mill work do not require an excessive size of cross section to prevent failure by lateral deflection; consequently there is no objection to them on this account, it seldom being necessary to employ a length of more than 14 or 15 feet.

As to the relative size in cross section area to that of length, it is in timber of good growth, sound throughout, free from cracks or defects, well seasoned, safe to use lengths which are from fifteen to twenty times the least side, that is the narrowest thickness if rectangular, the thickness if square and the diameter if round. In such timber thus proportioned there will be only little danger of the pillars failing by lateral deflection. In any common practice where a pillar is not supported from side bending, the length of twenty times the least thickness should never be exceeded; that is, for permanent mill or factory construction. It is to be noted that this does not determine the area of cross section to support a given load, but only the relation between the thickness and the length of a wooden column.

Whether a wooden pillar is round or square in section is usually a matter of individual taste as to its appearance. The square column is commonly used, and it is also the most convenient form to make attachments to where strength is required. Thus the square pillar is much the best as to practical use, and it is also the cheapest, because a round one requires a larger stick of timber to cut it from in order to secure a given area of cross section; there is also the expense of turning it. The old practice of tapering pillars is in most cases done away with; except where they are round, and when they are thus made the taper should be slight. The method of tapering to such an extent as has been done in the past was a serious mistake; it made the supporting area at the upper end inadequate in many instances, and at all events there is nothing gained by tapering a pillar, as for securing a given area of cross section and a given strength timber is wasted. If the tapered pillar is amply strong to support its load there is an excess of material at the lower part which is not needed at all; and it does not leave sufficient material at the top to allow for cutting away for attachments.

Both ends of each pillar should be sawed very carefully to exactly 90° with the length, and then planed across the grain to as smooth and clear cut a surface as can be obtained, to render the end grain as close and compact as possible, and thereby to help to prevent the ready absorption of moisture and the tendency to decay, which exists where wood is subject to alternate moisture and drying. The ends of wooden pillars should always be set in castings, as this not only gives strength to the structure but helps to prevent the decay of the wood.

Wooden beams placed directly on the ends of pillars cause deterioration much faster than where iron is interposed, and where a cross grain rests in contact with an end grain decay occurs more readily if dampness reaches it or if the wood is not completely seasoned. The details of the castings should be carefully considered, and such shape and strength should be secured as the place may require; they should be heavy, and flanged on all sides of the pillar, and of ample area of surface under the floor timbers and flanged on both sides of them; they should be so cast as to come from the molds perfectly even and smooth on their bearing surfaces, or else they should be planed up. The castings under the lower ends of pillars which rest on stone foundations should be extra heavy if placed upon rough stone work.

A pillar should always be cut from the central portion of a tree, and not from one side. This will secure a uniform grain all around and not heart wood on one side and sap wood on the other, which would cause it to deflect seriously under load. In solid timber of good growth the part near the centre line of the tree will sustain a heavier load than that near the outside. Among the most serious defects of timber are the heart shake and the cup shake. The first is splitting and separation in the inner portion of the tree, and is a sign of decay. The cup shake is a circular separation or a splitting between the rings of growth, which may be only developed near the base, or it may extend up the length of the tree. This is usually caused by sudden changes in temperature, freezing and heavy winds. Any indication of either of these two defects should cause the rejection of timber in a pillar. The splitting of timber on the surface is not so serious, but it should be guarded against as much as possible, and if developed to any extent it should be rejected. The latter defect, being largely the result of bad seasoning, it can be prevented by care in drying.

In all cases the seasoning of timber should be thoroughly done to prevent cracking and also to dry out all moisture and the organic substances, whose presence in timber promotes fermentation and decay. If timber is painted or treated in any way so as to form an impervious coating on the surface, fermentation is all the more likely to occur seriously if the organic substances are not thoroughly dried out. Therefore in cases of imperfect seasoning or drying it is far better not to cover the outer surface. As to the relative strength under compression of timber in various degrees of seasoning, there seems to be quite a range of different results in tests which have been made, and there appears to be no fixed relation between the strength of green and dry timber. There is no safe way, except to use that which has been satisfactorily seasoned where permanent heavy loads are to be supported.

In ordinary mill pillars of yellow pine it is probably not safe to figure an ultimate resistance to compression greater than 3,500 to 5,500 pounds per square inch. That is where the lengths are about fifteen or sixteen times the thickness, although in short specimens the ultimate strength may be 50 per cent. greater. Safety factors of four to five should usually be employed in figuring mill columns, ample provision being made for material which may be cut away where attachments of shaft hangers, &c., are to be made. This placing of a line of shafting on pillars is in many instances advisable, as it makes a saving in cost and repairs and a more satisfactory equipment than when the shafting is hung to overhead timbers. As to the treatment of the surfaces of pillars, provided they are thoroughly seasoned and dry, a very efficient method is an application of oil or resinous substances, which will prevent the absorption of moisture to a considerable degree, thus giving less tendency to split and decay. Linseed or vegetable fixed oils are usually the best to apply for this purpose. Crude petroleum is also reported to be a good preserving oil, and has been considerably employed. Animal oils should not be used.

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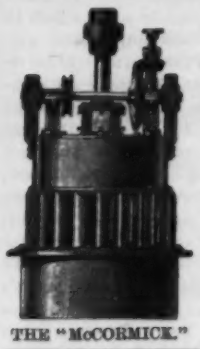
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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED APRIL 6, 1894.

An. Colors..	410	$29,546	Paper.....	1,900	$14,547
Alum.....	38	179	Steel Pens...	5	1,916
Alum's Cake	—	—	Stationery...	9	162
Bl. Powders	962	17,503	Slate Pencils	130	564
Soda Ash...	3,556	9,670	Clay.....	—	1,267
Soda, Caus.	563	7,350	J'te B'ts, &c.	—	—
Soda, Sal...	40	968	P. Hangings	31	1,726
Soda, Hypo.	—	—	P'p'r Stock..	5,511	50,421
Ultramarine	51	1,547	Terra Alba..	—	—
Books.....	270	28,917	Waste.....	—	—
Newspapers.	271	6,628	Wood Pulp..	1,315	14,916
Engravings.	76	7,439			
Ink.....	28	458		—	—
Lead Pencils	9	1,050	Totals....	14,465	196,074

Imports General Merchandise for the week ended April 6, 1894.....$7,390,740

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 31 TO APRIL 11, 1894.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	1,340	....	....	....	....
Antwerp.....	100	250	529	....	7,276
Aspinwall....	90	....	....	....	....
Bremen	532	....	....	....	2,497
Bristol.....	....	....	....	....	1,283
Buenos Ayres.	26	....	....	....	....
Calcutta.....	....	....	...	....	2,613
Cent. America	60	....	....	....	....
Christiania....	....	....	396	....	474
Copenhagen..	353	....	479	....	761
Dundee.....	....	....	....	....	477
Fiume.....	....	....	99	....	....
Geestemunde.	352	....	....	....	1,309
Genoa.....	....	....	....	....	2,306
Glasgow.....	88	28	....	....	77
Gothenburg..	....	....	52	....	....
Hamburg.....	252	76	322	....	1,338
Hiogo.....	7,119	....	....	....	....
Hull.....*a*	1,232	128	770	....	5,134
Kobe.....	1,365	....	....	....	....
Leghorn.....	1,110	....	....	....	....
Leith.....	....	100	....	....	....
Liverpool.....	166	277	....	....	7,211
London.....	1,339	778	20	....	3,008
Marseilles....	61	....	....	....	473
Nassau.....	23	....	....	....	....
Newcastle....	....	73	....	....	1,348
Rotterdam....	169	....	235	....	2,013
Southampton.	....	....	....	....	169
Stettin.....	2,054	....	355	....	642
Trieste.....	....	....	49	....	....

a. Including 347 bales cotton waste.

NEW YORK IMPORTS.

FROM APRIL 4 TO APRIL 11, 1894.

Paper Stock.

Castle & Gottheil, Waesland, Antwerp, 52 bs. rags, 10 bs. papers, 186 bs. manillas.

G. W. Millar & Co., by same, 135 bs. bagging.

R. H. Overton & Son, by same, 155 bs. bagging.

G. W. Sheldon & Co., by same, 101 tons chemical fibre.

Oelrichs & Co., Darmstadt, Bremen, 19 bs. manillas.

Ralli Brothers, Queen of England, Calcutta, 582 bs. manillas.

Lewy Brothers, Amerika, Copenhagen, 353 bs. rags.

F. Bertuch & Co., by same, 155 tons chemical fibre.

Jessup & Moore Paper Company, by same, 49 tons chemical fibre.

F. Salomon & Co., Marie, Geestemunde, 618 bs. bagging, 89 bs. rags.

E. Hatton & Co., by same, 108 bs. rags, 691 bs. bagging.

Lewy Brothers, Storm King, Hamburg, 218 bs. bagging, 53 bs. rags.

G. Hamilton, Francisco, Hull, 51 tons chemical fibre.

Castle & Gottheil, Italia, Leghorn, 350 bs. rags.

Kugelmann & Co., Cevic, Liverpool, 157 bs. bagging.

Darmstadt & Scott, Mississippi, by same, 34 bs. papers.

James Pirnie, Europe, London, 118 bs. bagging.

G. W. Sheldon & Co., Obdam, Rotterdam, 101 tons chemical fibre.

James Pirnie, by same, 590 bs. bagging.

Paper.

W. H. S. Lloyd, Chester, London, 5 cs. hangings.

Max Adler, Waesland, Antwerp, 60 bs.

E. G. Soltmann, by same, 2 cs.

L. De Jonge & Co., Taormina, Hamburg, 15 cs.

Henry Bainbridge & Co., Britannic, Liverpool, 2 cs.

Nevius & Haviland, by same, 3 cs. hangings.

E. & H. T. Anthony & Co., Obdam, Rotterdam, 8 cs.

American News Company, by same, 17 cs.

F. Beck & Co., Umbria, Liverpool, 1 cs. hangings

Dennison Manufacturing Company, by same, 86 cs.

W. Heuermann, La Gascogne, Havre 1 cs.

Drucklieb & Co., by same, 94 cs.

P. Beck & Co., by same, 1 cs. hangings.

Roux & Co., by same, 2 cs. hangings.

MacHugh & Co., by same, 4 cs. hangings.

American Tobacco Company, by same, 11 cs.

H. S. Leclercq, Veendam, Rotterdam, 3 cs.

O. F. Melvin, Friesland, Antwerp, 4 cs.

L. C. Wagner & Co., by same, 2 cs.

L. De Jonge & Co., by same, 1 cs.

G. Gennert, by same, 4 cs.

John A. Norman, by same, 6 cs.

G. W. Sheldon & Co., by same, 26 cs.

F. B. Vandergrift, Moravia, Hamburg, 16 cs.

BOSTON IMPORTS.

FROM APRIL 5 TO APRIL 11, 1894, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Gallia, Liverpool, 6 bs. periodicals.

Gregory & Brown, by same, 1 cs. paper hangings.

W. H. Proctor & Co., by same, 3 cs. paper hangings.

H. A. Turner & Co., by same, 8 cs. paper hangings.

A. H. Davenport, by same, 4 cs. paper hangings.

J. Dickinson & Co., Bostonian, Liverpool, 2 cs. paper.

C. Treiber, Stockholm City, London, 3 cs. paper.

Paper Stock.

Train, Smith & Co., Milanese, London, 110 bs. waste paper, 42 bs. manillas.

C. A. Cheney, by same, 107 bs. manillas.

Wheelwright Paper Company, by same, 79 bs. waste paper.

C. P. Sumner & Co., by same, 53 bs. waste paper.

Horace Dutton & Co., by same, 64 bs. rags

Crocker, Burbank & Co., by same, 214 bs. waste paper.

Horace Dutton & Co., Stockholm City, London, 113 bs. rags. 22 bs., 723 coils manillas.

True & McClelland, by same, 135 coils manillas.

Wheelwright Paper Company, by same, 109 bs. waste paper.

Crocker, Burbank & Co., by same, 145 bs. waste paper.

Horace Dutton & Co., Bostonian, Liverpool, 209 coils manillas.

C. A. Cheney, Kansas, Liverpool, 33 bs. manillas.

True & McClelland, by same, 55 bs. rags.

R. H. Overton & Son, by same, 75 bs. manillas.

Horace Dutton & Co., Mentmore, London, 101 bs. rags.

Wood Fibre.

Fred. Bertuch, Mentmore, London, 41 bs.

Bleaching Powder.

J. L. & D. S. Riker, Norseman, Liverpool, 89 cks.

J. L. & D. S. Riker, Kansas, Liverpool, 175 cks.

J. L. D. & S. Riker, Bostonian, Liverpool, 255 cks.

Linder & Meyer, Lake Superior, Liverpool, 58 cks.

Fuerst Brothers, by same, 57 cks.

Caustic Soda.

James Lee & Co., Kansas, Liverpool, 50 drums.

Soda Ash.

Warren & Co., Kansas, Liverpool, 45 cks., 600 bags.

Warren & Co., Norseman, Liverpool, 38 cks., 900 bags.

Wing & Evans, Lake Superior, Liverpool, 800 bags.

Linder & Meyer, Bostonian, Liverpool, 20 cks.

J. L. & D. S. Riker, by same, 780 bags.

Wing & Evans, by same, 33 cks., 400 bags.

Crude Sulphur.

Linder & Meyer, Bostonian, Liverpool, 2,004 bags.

Sizing.

C. A. Cheney, Kansas, Liverpool, 305 bags.

Train, Smith & Co., by same, 196 bags.

J. W. McClintock, Gallia, Liverpool, 80 bags.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED APRIL 7, 1894.

Paper Stock.

Order, Indiana, Liverpool, 112 bs. bagging.

Bank of British North America, by same, 260 bs. wood fibre.

Salt Cake.

Brown Brothers & Co., Indiana, Liverpool, 273 cks.

EXPORTS of Paper, &c., from New York for the Week Ended April 10, 1894.

BOOKS, cases, to British West Indies, 10; British Australasia, 24; British possessions in Africa, 3; Bremen, 6; Cuba, 22; Central America, 7; Chili, 11; London, 71; Liverpool, 2; Colombia, 7.

PAPER, to Cuba, 1,529 pkgs.; British West Indies, 320 pkgs.; Liverpool, 216 cs.; Central America, 27 cs.; British Australasia, 187 pkgs.; Hamburg, 14 cs.; London, 324 cs.; Chili, 163 cs.; Bolivia, 1 pkg.; Brazil, 24 pkgs.; Colombia, 69 pkgs.; Canada, 1 cs.; Danish West Indies, 17 pkgs.; Ecuador, 47 pkgs.; Hayti, 27 pkgs.; Mexico, 264 pkgs.; Peru, 2 cs.; San Domingo, 1 pkg.

STATIONERY, cases, to Cuba, 12; Colombia, 11; London, 15; British West Indies, 10; British Australasia, 2; Liverpool, 3; Southampton, 4; Bremen, 6; Central America, 8; Havre, 4; Hamburg, 3; Brazil, 6; Christiania, 2; Chili, 18; Danish West Indies, 3; Ecuador, 2; French West Indies, 1; Hayti, 4.

WALL PAPER, cases, to British West Indies, 1; Chili, 2; Havre, 8.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs.....	2,526	$7,549
Paper, cases.....	407	7,956
Books, cases.....	168	10,909
Stationery, cases.....	109	8,388
Rosin, bbls.....	1,188	4,210
Totals.....	4,348	$39,072

Exports General Merchandise for the week ended April 10, 1894..... $6,181,940

Storage Batteries.

The great importance of storage batteries as adjuncts to electric lighting, be it for the purpose of insuring steadiness in the light, easy regulation or economy in production and distribution—especially in central stations—or again in their application to the electric propulsion of vehicles, rightly called "the ideal mode of traction," is sufficiently, we may say universally, recognized by electrical, civil and mechanical engineers, so that a careful examination of our present position with regard to the quality in which these appliances are obtainable appears to us to be warranted, and most likely to be productive of good to both users and manufacturers.

What we have to determine is whether, and if so to what extent, progress has been made of late years in the manufacture of accumulators, in raising their efficiency and durability to a level at least with the generating plant; and to facilitate arriving at a conclusion, let us first state briefly what we may reasonably demand of a secondary battery, and then see in what measure these expectations can be complied with. We could name a number of electrical engineers—old established and well-known firms among them—who, while fully aware of the many advantages which can be derived from storage cells, have in consequence of adverse experience or through lack of confidence in them, or both, entirely abstained from their employment for years; but real demonstrated progress is destined to wear down prejudice, and our aim has always been to assist in this progress wherever we can do so conscientiously.

The desirable qualities in a set of accumulators for stationary purposes should be the following, viz.: (1) An average lifetime of ten years, while retaining at least 75 per cent. of their original capacity; (2) that the electrodes be of robust constitution and offer ample paths for conducting the current; (3) that the number of electrodes in a cell should be small, capacity for capacity, with low internal resistance; (4) that the dropping out of active material, buckling of the plates and consequent short circuits be impossible; (5) that the cells admit of being fully charged in three hours, and completely discharged in one hour, if need be; (6) that prolonged rests have no deleterious effects; (7) that discharges, even until there is no potential difference, do not damage the cells nor impair their capacity; (8) that they require no attention beyond charging and filling with electrolyte; (9) that they occupy as little space as possible; (10) that the efficiency of the cells be high; (11) that their price be moderate.—*Electrical Review.*

The World's Fair buildings, at Chicago, have been sold to L. C. Garrett, of St. Louis, for $75,000 cash. They cost $7,604,195.

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NEW YORK: SATURDAY, APRIL 14, 1894.

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NEW YORK, April 14, 1894.

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Douglas Taylor, New York, N. Y.
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THE CHEMISTRY OF PAPER MAKING.

AT last we think we see "daylight ahead" in the publication of this book. Mr. A. D. Little, the surviving author, has given the printer all of his copy, with the exception of the last chapter, (No. 10). If he will read proofs promptly, and turn in the remaining copy within a reasonable time, we will complete and deliver the work by or before June 1. The book is two-thirds in type, and half printed. Just as soon as it goes out of the press-room into the bindery, we will announce the date when Part One of Hofmann's Treatise on Paper Making will appear.

HOWARD LOCKWOOD & CO.

April 14, 1894.

THERE is a perceptible improvement in trade. Paper mills appear to be doing more business; some which were shut down have started up, and few are suspending operations entirely. Consumers' wants, narrowed to a certain degree, are more pressing, and consequently the demand calls for product.

AN improvement in calenders is the subject of illustration on the first page of this issue of THE PAPER TRADE JOURNAL. In this case independent adjusting shafts are employed to vary the pressure at the ends of the rolls, which are thereby quickly and easily adapted to the changes which may be required.

IF some promised new inventions in paper making machinery and processes come to fruition there is a probability that the trade will have a sensation. Of course all new things must have practical demonstration and be economically administered; but in the instances above referred to we think that the latter requirement will attend on the first.

THE London correspondent of THE PAPER TRADE JOURNAL refers in this issue to something which we had to say not long ago anent wages and the cost of living in Scotland compared with this country. He makes a point of citing something which he was told was said by a Scotch woman living in Holyoke. To this all that we have to say is to echo the remark of the individual who, on being told by an importation of how much better and more cheaply he lived in the "old country," asked why the grumbler did not return to his native land. Measure for measure, there are very few industrious and economical immigrants who find it desirable to go back to the scenes of toil which they forsook on coming to America.

AMONG the bills now before the Legislature of the State of New York are several which affect business men generally in their relations to the banks. One of these measures proposes to abolish the days of grace on promissory notes, so that the actual date on the instrument shall be the date of payment. There does not appear to be any special objection to this bill in the Senate, but the Assembly is evidently disinclined to favor it. The banks of the city so far have not opposed or urged the bill, but are adopting a passive policy in this as on other financial measures. The bill to reduce the legal rate of interest from 6 to 5 per cent. yet lies in the committee rooms, and the bankers do not appear to have even entered a protest against it at this session. Everybody recognizes this measure as an old timer. It comes up at every session. It is often called a strike. For years the banks sent delegations to oppose it, and each year they were successful in having it defeated in the Senate, although the Assembly passed it three years ago by a good majority. It is probable that the bill will scarcely be discussed at this session, as there is an abundance of bills ahead which will consume the time of the Legislature up to adjournment. Another bill which was recently introduced provides that when a check or a draft or bill of exchange or promissory note is drawn on or made payable to a bank and the latter pays the same in good faith, it shall not be incumbent on the bank to show that the indorsement of the payee was genuine or authorized, should an action be brought after the lapse of six months from the date of such payment, the bank after that period being deemed to have paid the check or other obligation. It is reported that this measure will not become a law.

Watermarks.

BY DANDY.

A New England paper prints a letter from the wife of a subscriber. After stating that her husband had taken the paper for thirty years and that owing to the hard times he had threatened to stop it, she remarks: "I said: 'You can't have any more coffee for breakfast when you stop the paper.' I heard nothing more about economizing in that direction. I would give up the luxuries and some comforts before I would my paper. We have such fine editorials and, best of all, don't have to read a column of matter to get a few facts."

That woman knew her husband's weak spot. Her intelligence, however, is greatly to be complimented. I cannot say as much for him.

A paper maker whose name was John was calling on his best girl. The discussion, after touching lightly on the weather and other topics, drifted to cake, and he inquired as to her favorite style of that article. "Well," she said, "I think I like Johnny cake better than any other." He "caught on," and there was a wedding soon afterward.

An importer received from Germany this week a package which was supposed to contain a sample of flax waste. When he opened it he found a sample line of black fabric gloves, each one properly ticketed with size, price, &c. The importer says that flax waste of that kind doesn't go here.

You can easily pick out the importer, because as the gloves were not in pairs, he can only wear one glove at a time. Look out for him.

The ignorance of some people on the question of paper is wonderful. A young man wandered into a Beekman street paper house recently, and holding out a sample, asked them to match it. They did with a poor quality of engine sized flat, and when the salesman called it by that name, the would-be purchaser said, "Why, my sample is bond paper."

Possibly it bore the same relation to good bond that "straw bail" does to the genuine.

Don't touch Brooklyn members of the paper trade on their left arms, because all of them have been vaccinated, and the virus took in every case.

Anent the strawboard damage by water uptown one man says: "I guess the firemen thought the American Strawboard Company didn't have enough water in its stock," while another fellow, when told that the entire stock of boards was soaked, said: "Well that's what was done to the stockholders." Come, now, boys, don't be too harsh in your criticisms.

Speaking of the arrest of a member of a brokerage firm in another line for the violation of the obligations of the trust receipts given to banks which have advanced funds upon importations, a writer says: "These trust receipts bind the importers to hold the goods purchased with the banks' credit, or the proceeds of their sale, as the property of the banks until the drafts drawn against the merchandise have been paid. They constitute the only security which the banks retain. When the firm failed it was found that the goods imported at the expense of the banks had been pledged for funds which the firm had used up without providing for the payment of their drafts upon the banks. The plea of mercantile usage was set up in defense of a violation of a solemn obligation to the banks, and the fact that in spite of the strenuous efforts of influential counsel the Grand Jury has found that this is no defense for the crime of making away with other people's property is a great gain for the security of bankers and for honorable methods in the conduct of the importing business."

Trade Talks.

Thomas P. Wilkinson, of Wilkinson Brothers & Co., New York—Yes, we like our change from Duane street to our present quarters at 419 and 421 Broome street. I have wanted to get out of our Duane street building for some years, for it was badly arranged and could not be used to advantage. We were in Duane street many years. In 1842 we started business in the Architectual Iron Building at the other end of the street. We outgrew those quarters and went into Nos. 44 and 46. Then we outgrew those and went to Nos. 48 and 50. Our business continued to spread, and eighteen or twenty years ago we went to No. 72, and about fifteen years ago we took in No. 74, where for a time we had THE PAPER TRADE JOURNAL as a tenant. After Mr. Lockwood removed we used the two entire buildings. In 1872 we built our mill. In 1879 it was burned down, but was at once rebuilt. Our present quarters are much preferable to those we left. We have here a double store, with basement and cellar, and as it is all clear, unbroken space we can use it to great advantage. From a business point of view we like it first rate, and already we have had new customers come to us. One can hardly change a business location without losing some and gaining some customers. We have been doing a very good business, although prices are low. Since our house was established there have been big changes in the paper trade. I remember distinctly that in 1879 and 1880 we sold manilla paper at 11½ cents a pound, sending a great deal to Chicago at that price. We can now sell an equally good paper at 4 cents a pound, a fact which indicates how prices have fallen.

Changes, Removals and New Firms.

A. G. Mortimer, publisher, Toronto, Ont., has sold out.

C. T. Myers, publisher, Jewell Junction, Ia., has sold out.

Trent & Hall, stationers, &c., Wilsonville, Neb., have sold out.

W. H. Schardin, publisher of the *News*, Newcastle, Cal., has sold out.

P. Nugent, publisher of the *Catholic Tribune*, St. Joseph, Mo., has sold out.

A. M. Bock, printer and publisher of the *Express*, Elora, Ont., has sold out.

Joe L. Mahaffey, printer and publisher, Seward, Neb., has sold out.

McDonald & Clyne, stationers, New York, have removed from 65 Nassau street to 25 John street.

A weekly paper, to be known as the *Herald*, will be published on May 1 at Greenbush, N. Y.

Daly, Ferguson & Co. have started in business as paper and paper stock dealers at Rochester, N. Y.

Lorettus S. Metcalf has begun the publication of a newspaper, known as the *Daily Citizen*, at Jacksonville, Fla.

Murphy & Eckner, dealers in paper hangings, &c., Watertown, N. Y., have been succeeded by Murphy & Dobbratz.

J. K. Hood and B. F. Brown, Jr., have organized the Columbia Publishing Company, which will carry on business at Anderson, S. C.

W. E. & E. D. Lockwood, manufacturers of envelopes, &c., Philadelphia, Pa., have been succeeded by the Lockwood Manufacturing Company.

L'Araldo Publishing Company, New York, has been incorporated with a capital of $60,000 to publish an Italian and English newspaper to be known as the *Italian Herald*.

Paige & Strachan, paper dealers, Detroit, Mich., have been succeeded by the Paige & Strachan Paper Company, incorporated. The capital stock of the company is $50,000, of which $35,000 have been paid in.

C. H. Parsons, bookseller, stationer, &c., Salt Lake City, Utah, has sold his business to the Parsons & Derge Book Company, incorporated. The capital stock of the company is $16,000, paid up. A. R. Derge, of this company, was formerly a partner of Mr. Parsons.

Lewis Frank & Co., New York, have been incorporated to carry on a general collecting, adjusting and publishing business, and to administer insolvent and other estates. Capital, $10,000, and directors: Lewis Frank, Bettie H. Frank and Farquhar J. Macrae, New York.

The *Enquirer* Company has been incorporated to print and publish daily and weekly newspapers at Buffalo, N. Y., and to carry on general printing and bookbinding business. Capital, $60,000, and directors: Charles F. Kingsley, George Rehbaum and Frank C. B. Held, of Buffalo.

Norman Wright, buyer for the Parker Stationery Company, and Eugene Wright, formerly with George D. Barnard & Co., St. Louis, Mo., have formed a copartnership under the style of the Norman Wright Stationery Company, and are about to open a commercial stationery store at 606 Chestnut street, St. Louis.

The B-M-A Manufacturing Company has been organized at Toledo, Ohio, to manufacture articles from paper pulp. The capital stock is $25,000, and the officers of the company are: T. E. Baird, president; A. H. Martin, secretary and treasurer, and C. M. Armstrong, vice-president and general manager.

The Standard Box Company has been organized at Lewiston, Me., for the purpose of making and selling all kinds of boxes made from strawboard, pasteboard, wood, &c., with $9,000 capital stock, of which $100 is paid in. The officers are: President, John F. Horne, of Auburn; treasurer, A. L. Childs, of Canton.

J. Willson Wilson, bookseller, stationer, engraver and printer, 16 West 125th street, New York, has been succeeded by J. Willson Wilson & Co., Mr. Wilson having admitted William Cooper Lewis to partnership.

The University Press, of New York city, has been incorporated to own and publish periodical publications. Capital, $50,000, and incorporators: C. Lawrence Perkins, H. B. B. Staples, Henry B. Howland, J. F. Kernochan, Winthrop Cantler, Charles Seymour Wood, Henry G. Chapman, S. R. Edward, of New York.

The Thos. H. Crosley Company, of New York city, has been incorporated to manufacture electrotype and stereotype plates in connection with the transaction of a printing business. Capital, $5,000, and directors: Daniel B. Tredwell and Edgar A. Tredwell, of Brooklyn, and James B. Pendleton, of New York.

The *Pigeon World* Publishing Company, Baltimore, Md., has been incorporated by William T. Levering, Ernest Gill, G. O. Brown, William J. Robertson, F. A. Rommel and Henry Tieman, for the purpose of publishing a paper devoted to the raising and breeding of pigeons and other birds. The capital stock is $10,000.

Failures.

The sheriff has received an execution for $10,284 against Wm. C. Rogers, printer, of No. 14 Vesey street, New York, in favor of Myrick Plummer for merchandise and deficiency on a foreclosure of a chattel mortgage on the plant.

Mortimer & Co., blank book manufacturers, Ottawa, Ont., are asking an extension. They have been hard pressed for money for several months past. The business was established thirty years ago, and they heretofore valued their stock and plant at $30,000.

The contents of the printing establishment at Nos. 21 and 23 Rose street, New York, carried on under the name of B. Brown, were sold at auction on April 9 under a chattel mortgage. The business was begun by Samuel J. Brown ten years ago, and he turned it over to his wife, Betty Brown, about two years ago.

The Minerva Publishing Company, of No. 25 Vandewater street, New York, yesterday confessed judgment for $14,983, in favor of Frank T. Morrill, on a demand note dated March 24, for a loan made on that date of $14,965 by Mr. Morrill. The judgment is signed by T. T. Timayensis as president. The sheriff has received an execution for $136 against the company, in favor of Eugene A. Hoffman, and levied on the safe and a quantity of books. Mr. Morrill claimed that he owns the plant.

The Redhead, Morton, Lathrop Company, Des Moines, Ia., which recently failed, is unable to carry out its compromise of 25 cents on the dollar. George R. Lathrop, of the company, has issued a circular stating that he has made an arrangement by which an unnamed person will pay the creditors 25 cents on the dollar provided he can secure almost all claims without delay. He asks creditors to send claims to the Des Moines National Bank with instructions to deliver the same on payment of the compromise.

Two Chicago companies, the Empire Show Printing Company and the Globe News Ink Company, have failed in connection with the embarrassment of the George Mather's Sons Company, printing ink manufacturers, No. 29 Rose street, New York. The Chicago concerns were virtually owned by the New York company, Ralph N. Perlee being president of the three companies. The Empire Show Printing Company was organized about five years ago, succeeding the J. B. Jefferey Printing Company, which had failed. George Mather's Sons were the largest creditors, and they took hold of the plant and organized the company to get their money out. The capital stock was $100,000. The Globe News Ink Company was organized about two years ago with a capital of $25,000. Levi C. Lathrop, of New York, was vice-president. He was also a director in the failed St. Nicholas Bank. George L. Fenner, secretary of the George Mather's Sons Company, said that both of the Chicago companies had made an assignment to the Equitable Trust Company for protection against attachments. The liabilities of both companies combined he did not think would exceed $100,000, while the nominal assets were much larger. The Empire Show Printing Company on January 1 had a nominal surplus of $208,000. It had gone to considerable expense in putting in new presses for World's Fair business, which did not come. Notes of both companies which had been indorsed by the George Mather's Sons Company had been discounted by the St. Nicholas Bank of this city, but he could not state definitely the amount.

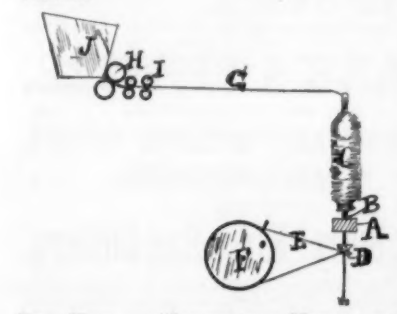
New Inventions—XXXI.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Geo. Damon Rice.

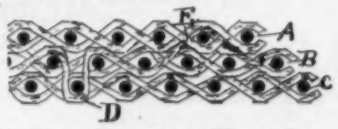
Now it is proposed to spin yarns from paper in such a way that they may be woven into a belt. Paper yarns alone do not possess sufficient durability to stand the wear and tear accompanying the driving of pulleys on heavy shafting; but the application of other ingredients with the paper stock overcomes this. The first process in making these new paper belts consists in the introduction of the paper pulp in a tank; then 10 per cent of coarse cow hair or wool is put in and thoroughly mixed; this hair furnishes a fibre to the yarns which are going to be made from the pulp; then a few pounds of tallow are dumped in so as to make the stock soft; then a little glue and borax, and the stock is ready.

After soaking a day or two the pulp is put into the tank of the machine which is to reduce it to a thread. Here is a rough drawing of the machine used for the purpose and which has been made by the inventors.



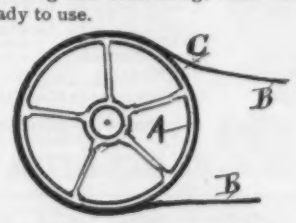
Side View of Machine for Making the Yarns.

In this sketch the manufacturer of textiles will recognize the principle of the ordinary spinning mule. Only one bobbin is shown, while in practice there are many bobbins side by side. A is the part which supports the bobbin and its spindle B. The bobbin itself is marked C. There is a whirl, D, around which runs the belt E, which is turned by the cylinder F, the latter revolving about 400 times per minure, and turning the spindle about 4,200 times a minute. J is the tank containing the pulp. An automatic faucet governs the supply of pulp, which runs slowly in between the rollers H, where it is rubbed and compressed and then goes forward between the guide rollers I, then out to the bobbin C. The strand is indicated by G. The revolutions of the spindle twist the strand firmly, then wind it around the bobbin, just as is done in the spinning of common cotton or woolen yarns. The yarn is spun and then comes weaving. Carpet looms are used, and hence this may open up a new avenue for the use of carpet looms. A three ply weave is employed, as shown in the next cut.



Sectional View of the Woven Belt.

Those familiar with carpet construction will see in this the regular three-ply carpet weave. A is the top layer, B the interior and C the back. The threads which hold the layers together are signified by D and E, an examination of which will show how the threads at a certain time interlock with the top and lower layers, thus holding the whole firmly together. The black dots represent the filling of the woven fabric; the lines running the other way are the warp. Of course only big, heavy, broad belting is now made experimentally, but later the loom will be so arranged as to give any width of belt. When the belting leaves the loom it is loose and flabby, like any woven fabric. It goes into the fulling mill next, where the fulling operation closes up every tissue, and when the belt is removed it is found to be fulled and shrunk into a firm, durable and elastic body, resembling the common leather belting in many ways. Of course it looks rough, but this is overcome by pressing and varnishing, when the belt is ready to use.



View of Pulley and Belt.

Here is a view of one of the pulleys which I saw in the experimental rooms over which one of the woven leatner belts was running. A is the pulley, B the belt, and at C I noticed that the belt hugged the pulley nicely, which is very desirable, as more friction is obtained.

Many a big driving belt has cost the owner $100 or more. If the same thing can be obtained for half that by using woven belts, it follows that it is going to be done.

Market Review.

Office of The Paper Trade Journal, Friday, April 13, 1894.

THE MONEY MARKET.—The stock market was very dull. The loan market was inactive and easy in tone, with a very small demand for accommodation on account of the current light speculation in securities. Call loans on stock collateral were made at 1 per cent. at the Stock Exchange, and seldom at higher than 1½ per cent. outside. Banks are glad to loan even at these low rates on securities that command a ready market. Time loans were dull owing to the small demand, while institutions were offering freely at the current low rates, which are 2@2½ per cent. for short and 3 per cent. for long dates on active lines of mixed securities. The supply of commercial paper does not improve, practically the only business done by the banks yesterday being the rediscounting of some lines of country paper. Brokers cannot accumulate satisfactory lines of good notes, and say that many of their regular customers, besides being out of debt to their banks, are carrying large idle cash balances. Rates for paper are 3 per cent. for best indorsed receivables; 3½ @4 per cent. for best single names, and 4½ @6 per cent. for other grades. The market for foreign exchange was strong and slightly higher, owing to the scarcity of bills. Sterling in Paris showed some advance, but it was thought that this would not be sufficient to prevent the export of a little gold on Saturday. Posted rates were $4.88 for sixty days and $4.89½ for sight. Actual rates were $4.87¼@4.87½ for sixty days and $4.88½@4.89¼ for sight. Government bonds were firm, closing as follows: 4s. registered, 114@114½; do. coupon, 114¼@114¾; new 5s. registered, 118⅝@119; do. coupon, 118⅝ @118⅞; 2s, 96; currency 6s., 1895, 103; 1896, 106; 1897, 108½; 1898, 111; 1899, 113½. Sales were $1,000 4s. registered at 114¼; $4,000 5s., coupon at 118⅝, and $60,000 do. at 118¾.

THE PAPER TRADE.—City houses have suffered from fire this week, a stock of manillas and about 1,500 tons of strawboards, pulp boards, &c., being damaged by fire and water. The paper market does not develop any especially new features. Mills are running on somewhat better time and there is a fair movement from jobbers' hands, without any marked increase in volume. Prices do not improve any. Strawboards continue to sag and there have been sales at $19 f. o. b. at mill.

JUTE BUTTS.—The market is exceedingly quiet. We note sale 500 bales paper quality on spot at 1⅛c.

WOOD PULP.—The Ground Wood market is unchanged. Home trade is quiet, but cargoes continue to go to the other side. The steamer Thomas Melville will shortly arrive at Portland, Me., where she will load with Ground Wood for export. In this line pulp is selling at $15.50 at sea board.

WOOD FIBRE.—There is a moderate trade in progress. The domestic mills are making fair time, and foreign fibre is moving, mostly however in small lots. Domestic Soda is quoted at 3@3¼c. for Bleached. Domestic Sulphite is quoted at 2¾@2¾c., as to quality, for Unbleached, and 3½@4c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.25c.; Bleached, do., 4@4½c.; Bleached Straw Pulp, 4@4½c. Imports this week aggregated 457 tons, being 101 tons from Antwerp, 204 tons from Copenhagen, 51 tons from Hull and 101 tons from Rotterdam.

FOREIGN RAGS AND PAPER STOCK.—The market is quiet and sales are of a very unimportant character. There continues to be some inquiry for Japanese Blue Cottons, which are generally quoted 1¾c., with 1.35c. declined. There was a sale of 200 tons this week on private terms. Imports for the week aggregated 4,573 bales and 457 tons, being 1,060 bs. rags, 44 bs. papers, 457 tons chemical fibre and 3,469 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 52 bs. rags, 10 bs. papers, 101 tons chemical fibre and 476 bs. manillas; Bremen, 19 bs. manillas; Calcutta, 582 bs. manillas; Copenhagen, 353 bs. rags, 204 tons chemical fibre; Geestemunde, 252 bs. rags, 1,309 bs. manillas; Hamburg, 53 bs. rags, 218 bs. manillas; Hull, 51 tons chemical fibre; Leghorn, 350 bs. rags; Liverpool, 34 bs. paper, 157 bs. manillas; Rotterdam, 101 tons chemical fibre and 590 bs. manillas.

DOMESTIC RAGS.—The market shows a moderate movement. We quote: Whites, 3@3¼c.; Soiled Whites, 2@2¼c., and No. 2's. at 1@1½c.

BAGGING, &c.—The market for Gunny is quiet, although there is some little inquiry abroad. We note sale 300 tons, No. 1 Gunny at 1.15c. We also note sale 25 tons Burlap Bagging at 1.25c. Manilla imports for the week aggregate 3,469 bales, being 476 bs. from Antwerp, 19 bs. from Bremen, 582 bs. from Calcutta, 1,309 bs. from Geestemunde, 218 bs. from Hamburg, 157 bs. from Liverpool, 118 bs. from London and 590 bs. from Rotterdam.

OLD PAPERS.—There is a moderate trade. in progress. We quote: No. 1 Hard White Shavings, 2¼c.; No. 1 Soft White do., strictly free from wood, 2⅛@2½c.; Soft White do., ordinary, 2@2¼c.; Old Ledgers, 2¾c.; Solid Printed Books, 1½c.; Mixed Shavings, No. 1, 1.20 @ 1.25c.; Mixed Shavings, No. 2, ¾@1c.; Extra No. 1 Manillas, 1¼@1.30c.; No. 1 Manillas, ordinary, 1c.; No. 2 Manillas, .85@⅞c.; Light Book Stock, ⅞@1c.; Folded News, 45@50c.; Mixed Papers, 50@55c.; Commons, 45@50c.; Bogus Manillas, 65@70c.; Straw Clippings, 60@65c.; Binders' do., 55c.

STRAW.—Straw is quiet and barely steady. We quote: No. 1 Long Rye at 60c.; No. 2 Long Rye at 50@55c.; Short Rye at 45@50c.; Oat at 50@60c., and Wheat at 45@50c.

ROSINS.—Common grades are scarce and a shade higher. We quote: Common to Good Strained, $1.42½@1.45½; E, $1.55; F, $1.70; G, $1.90; H, $2.15; I, $2.50; K, $2.75; M, $2.90; N, $3.10; W. G., $3.25@3.30.

CHEMICALS.—The market for paper makers' chemicals continues quiet. Of the Liverpool market J. P. Brunner & Co. speak as follows: "The principal feature in chemicals is the drop of 10 shillings per ton in Ammonia Alkali, which has rather taken the market by surprise. The United Alkali Company's report for 1893 has been issued, and shows a net profit for the twelve months ending December 31, 1893, of $375,414, as compared with $741,233 for the previous twelve months. The enormous falling off is considered unfavorable, even after taking into account the coal strike and also adverse state of trade generally during last year. Soda Ash is dull and lower for Leblanc makes, in sympathy with the decline in Ammonia Ash, and quotations are quite nominal, as follows: Caustic Ash, 48 per cent., £3 15s.@4 per ton; 57 to 58 per cent., £4 10s @4 15s. per ton. Carb. Ash, 48 per cent., £3 5s.@3 15s. per ton; 58 per cent., £3 10s.@4 per ton, net cash. Ammonia Ash, 58 per cent.—The leading makers have reduced the price 10 shillings per ton to £3 10s. per ton for casks and £3 5s. for bags, net cash. This has stimulated business somewhat, and a fair number of orders have been placed at the reduction. Soda Crystals are in poor demand, but unchanged at £3 17s. 6d. per ton, less 5 per cent. Caustic Soda is in light request, and makers are anxious for orders; quotations vary considerably according to export market, and the spot range is quite nominal as follows: 60 per cent., £7 15s.@8 10s. per ton; 70 per cent., £8 15s.@9 10s. per ton; 74 per cent., £9 15s.@10 10s. per ton; 76 per cent., £10 15s.@11 10s. per ton, all net cash. For parcels under 10 tons 5 per cent. per ton extra is charged. Bleaching Powder varies in price according to export market from £7 10s.@8 5s. per ton net cash for hardwood packages, and a moderate business passing. There is a good inquiry from the States for outside makes, but nothing offering on this market available for export to your side at present." In the local market Bleaching Powder is in better demand, both for prompt and future delivery. Caustic Soda has improved in business a little; Alkali has been in free arrival and Sal Soda is unchanged. During the week there have been sales of 100 casks Bleach at 2¼c.; 50 tons Soda Ash at 1½c.; 75 tons 58 per cent. Alkali at 1.15c.; 100 drums Caustic at 2¼@2.80c.

CHINA CLAY.—There is a quiet but steady movement on the basis of former quotations, with a suggestion of more activity in the local inquiry.

TWINES.—Trade is quiet. We quote: Cordage—Manilla Rope, half inch, 12¼c.; Sisal Rope, half inch, 11¼c.; New Zealand Rope, half inch, 6¼c.; Jute Rope, half inch, 6c.; Sisal Hay Rope, 6¼c.; Sisal Lath Yarn, fine, 9¾c., and medium, 9¼c.; Jute Lines, 6½c.; Jute Ready, 6c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¼c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c.; Russian Hemp Hay Rope, 9c.

COAL.—The market for Anthracite trade is said to be in fair shape, in view of the conditions with which it is surrounded. The restriction of the supply to the demand is kept up. Soft coal is in fair demand, and quite a number of contracts have been recorded. At Philadelphia and New York there are various rumors as to the price at which coal can be had on contracts, but the best coals are firmly held. Consumers of coal for steam are using the cheapest soft coal they can get, independent of quality.

EDWIN BUTTERWORTH & CO.,
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing,
Wood Pulp, Moist and Air Dry Pulp,
Soda and Ground Pulp,
83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
JAMES PIKNIE, A. S. DEMAREST, Managers.

WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.
ORISKANY, N. Y.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	85	@	1.00
White tissue, 24×36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¼	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2½	@	3½
Wrapping Parchment	16	@	20
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	34.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	85	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	72
24×36, from 24 to 26 lbs. ℔ rm	....	@	60
22×32, from 24 to 26 lbs. ℔ rm	56	@	....
20×30, 21 lbs., ℔ rm	....	@	44
20×30, from 14 to 17 lbs. ℔ rm	36	@	....
16×22, from 12 to 13 lbs. ℔ rm	28	@	....
18×28	....	@	32
15×20, 10 lbs. ℔ rm	17	@	19
15×20, from 7 to 8½ lbs. ℔ rm	17	@	19
14×18	....	@	15
12×16	....	@	13
11×15	....	@	11
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 900 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12×18	18	@	20
14×20	22	@	....
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Woolen Rags.

Comforter Stock	8	@	9
White Woolens	9	@	10
Blue Gray Stockings	7	@	8
White Stockings	15	@	16
Blue Flannels	6	@	7
Reds, old	7½	@	8
Reds, new Shirt Clippings	20	@	21
Mixed Softs, free of Carpets	7½	@	8
Seamed Cloth	3½	@	4
Skirted Cloth	2½	@	2
New Cloth Clips	9	@	11
New Satinets, clean stock	1¼	@	1½
Satinets, old	65	@	75
Seams	1	@	1¼
Delaines, stripped for extract	2½	@	3½
Blankets, Woolen	2½	@	2½
Wool Carpets	3	@	....
White Linseys	3	@	3¼
Mixed Linseys	1½	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	6	@	6¼
Mill Assorted Whites	4	@	4½
Unbleached Muslins	5	@	5¼
City Whites, No. 1	3½	@	....
New Seconds, light	2½	@	3
New Seconds, dark	2¼	@	2½
No. 2 Whites	1½	@	....
Cotton Canvas, No. 1	4½	@	....
Linen Canvas, No. 1	....	@	4
Country Mixed, free of Woolens	75	@	1
Seconds (City)	90	@	1
Colors, ℔ 100 lbs.	....	@	....
Manilla Rope	2.50	@	....
Manilla Rope, tarred	....	@	2
Gunny Bagging, No. 1	....	@	1½
Gunny Bagging, No. 2	90	@	1
Burlap Bagging, No. 1	1	@	1¼
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1¼	@	1½
Hemp Twine Stock	2½	@	....
Jute Waste	¾	@	1

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3½	@	....
Hard White Shavings, No. 1	3	@	3¼
Soft White Shavings, strictly free from wood	2½	@	2¾
Soft White Shavings, ordinary	2½	@	....
Mixed Shavings, part white	1	@	1½
Ledger and Writing	....	@	2¼
Solid Stock	....	@	1¾
Book Stock, No. 1 light	....	@	1¼
Old Newspapers	55	@	57
Imperfections	....	@	....
Manillas, No. 1	....	@	1.25
Hardwares, No. 1	65	@	....
Bogus Manillas	60	@	65
Mixed Papers	40	@	50
Commons	35	@	40½
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	60	@	65

English Rags, &c.

New Cuttings, cotton	5	@	5⅛
London Fines, cotton	3⅞	@	4
Outshots, cotton	2⅞	@	3
Seconds	1¾	@	1.65
Thirds	1¼	@	1⅜
New Print Tabs	2¼	@	3
Checks and Blues	2¼	@	2¾
Light Prints	1½	@	1¾
Light Fustians	2	@	2¾
Dark Fustians	1¾	@	1⅞
Black Calicoes	1½	@	1¾
First Canvas Linen	3¾	@	4
Second Canvas Linen	3	@	....
Gunny Bagging, No. 1	1¾	@	1¼
Gunny Bagging, No. 2	1.05	@	1.20
Burlaps Bagging, No. 1	....	@	1.60
Rope, Manilla	2⅜	@	....
Rope, Manilla, tarred	....	@	2
Jute Threads	....	@	1¾
Clean Jute Ropes	2	@	2¼
Mixed Rope	1½	@	1¾
Flax Tow	1¾	@	1¾

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2¾
White and Colored Shavings, No. 1	1¾	@	1¾
White and Colored Shavings, No. 2	1	@	1¾
Cream Post Shavings	2¾	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	....	@	1.90
Newspapers and Pamphlets, extra	1¾	@	....
Old Newspapers	75	@	....
Broken News and Letters	¾	@	1
Old Blank Books	2¼	@	2¼
White and Buff Railway Sheets	1¾	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1.55	@	1.75
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2¾
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¾
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	2¼	@	....
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.75	@	2.80
Clay, China, English, ℔ ton	13.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3¼
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	25
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.42½	@	1.45
Rosins, E, ℔ bbl	....	@	1.55
Rosins, F, ℔ bbl	1.70	@	....
Rosins, G, ℔ bbl	....	@	1.90
Rosins, H, ℔ bbl	2.12	@	....
Rosins, I, ℔ bbl	....	@	2.50
Rosins, K, ℔ bbl	2.75	@	....
Rosins, M, ℔ bbl	....	@	2.90
Rosins, N, ℔ bbl	3.10	@	....
Rosins, W G, ℔ bbl	3.25	@	3.30
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2¼
Sulphuric Acid, 66 ℔ cent	1	@	1¼
Ultramarine, blue	14	@	17¾
Venetian Red	1	@	1¾
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3½	@	3¾
No. 2 Whites	2	@	....
Common Seconds	1¾	@	2
Thirds and Blues	1	@	1¾
Southern Mixed Rags	....	@	1¾
Colors, country	1	@	....
Colors, city	25	@	30
New Calicoes, light	....	@	3½
New Calicoes, dark	....	@	2¾
Shirt Cuttings, best	5¼	@	5¾
Shirt Cuttings, good	4	@	....
Shirt Cuttings, unbleached	4	@	4¼
Shirt Cuttings, unbleached No. 2	2¾	@	3
Shirt Cuttings, cheviots	2	@	2½
Overall Cuttings, blue	....	@	3½
Overall Cuttings, brown	2½	@	2¾
Shoe Rags, bleached	4	@	....
Shoe Rags, unbleached	....	@	3¾
Shoe Rags, brown	3	@	....
Cotton Flannels, bleached	4	@	4¼
Cotton Flannels, unbleached	3½	@	4
Corset Rags, drab	3½	@	....
Corset Rags, white	4¼	@	4½
Tailors' Seconds	2	@	....
Tailors' Colors	25	@	40
Cotton Canvas	....	@	1
Cotton Canvas, No. 2	....	@	1½
Linen Canvas	....	@	2
New Canvas Cutting	4½	@	....
Insole Canvas	3	@	3½
Print Papers, best	40	@	50
Print Papers, ordinary	....	@	35
Foided News	50	@	....
Old Waste Papers	35	@	40
Manilla Paper, No. 1	1.20	@	1.25
Manilla Paper, good mixed	90	@	....
Manilla Paper, blues	75	@	....
Mixed Book Stock	1	@	1¼
Books and Pamphlets	1¼	@	1¾
Book Stock, light	¾	@	1
Ledgers and Letters	2	@	....
Soft Book Shavings	2	@	....
Hard White Book Shavings	3	@	....
Straw Chips	50	@	60
Shivey Bagging	1½	@	....
No. 1 Factory Bagging	1	@	1½
Burlap Bagging	1	@	1¼
Burlap Bagging, large pieces	1½	@	2¼
Kentucky Bagging	1½	@	....
Mixed Bagging	½	@	....
No. 2 Bagging	½	@	¾
Shakings, soft	½	@	¾
Tarred Shakings	1	@	1¼
Standing Rigging	3	@	....
Standing Rigging, foreign	2¼	@	2¾
Bolt Rope	2¼	@	....
Oakum Junk, No. 2	1½	@	1¾
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	½	@	....
Manilla Rope	2¼	@	....
Tarred Manilla	1¾	@	1¾
Hemp Strings	1½	@	2
Sisal Strings	....	@	1
Wool Strings	....	@	1
Flax Tow	½	@	1¾
Flax Waste	½	@	1¾

Chemicals.

Alkali	1.15	@	1¼
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	2	@	2¼
Alum, American lump	1¾	@	2
Anti-Chlorine	3	@	3¼
Bichromate Potash, American	10½	@	....
Bleaching Powders	2¼	@	....
Blackley Blue	3.00	@	3.00
Caustic Soda, 70 ℔ cent. (for 60 ℔ cent.)	2.80	@	2.85
Clay, English, ℔ ton	14.00	@	18.00
Clay, American, ℔ ton	13.00	@	14.00
Copperas, ℔ lb	¾	@	1
Extract Logwood	5½	@	6½
Lime, Lockland, ℔ bbl	95	@	1.00
Prussian Blue, ℔ lb	50	@	60
Prussiate Potash, American, yellow	....	@	18½
Prussiate Potash, red	51	@	58
Rosin, common strained, ℔ bbl	....	@	....
Rosin, E	....	@	1.45
Rosin, F	1.50	@	....
Rosin, G	....	@	1.55
Rosin, extra pale	....	@	....
Sal Soda, English, ℔ lb	92½	@	.95
Soda Ash, 48 ℔ cent. caustic	....	@	1.62½
Soda Ash, 48 ℔ cent. carbonated	....	@	1.70
Soluble Blue	55	@	65
Sugar Lead, white	12½	@	13
Sugar Lead, brown	7½	@	8½
Sulphuric Acid, 66°	1¾	@	1¾
Terra Alba, ℔ ton	15.00	@	20.00
Ultramarine, ℔ lb	12½	@	15
Venetian Red, ℔ lb	1¾	@	1¾
Vitriol, Blue	5½	@	6¾
Yellow Ochre	½	@	1

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

J. F. NIXON, SEVENTEEN YEARS' EXPERIence manufacturing paper, is open for engagement; manager, superintendent or salesman; manilla mill preferred. 24 South Fourteenth Street, Richmond, Ind.

WANTED—SITUATION AS CYLINDER MAchine tender; sober, experienced man; state wages; used to flour sack and all papers. MACHINE TENDER, Box 134, Stillwater, N. Y.

A FOREMAN WITH TWENTY YEARS' PRACtical experience on book, news and manillas desires situation; best references. Address J. H., Box 178, Niagara Falls, N. Y.

YOUNG MAN, THIRTY-FOUR, WITH GOOD, sound, practical experience in the manufacture of papers, Jacquard cards, leather boards and mill boards, requires position as manager or sub-manager; good organizer, also good salesman. Address M., Paper Trade Journal, Duane street, New York.

WANTED—BY SOBER, STEADY MAN, SITUAtion as machine tender on Fourdrinier or cylinder; twenty years' experience; understands water finish. Address two weeks Box 609, Franklin, Mass.

WANTED—A POSITION AS FINISHER; twelve years' experience on all grades; or would accept position in wholesale paper house; A1 references. WILL, care Journal.

WANTED—SITUATION BY FIRST-CLASS machine tender; accustomed to large and fast running; book, news or manilla; married, steady and sober; good references. FIRST CLASS, care Journal.

SUPERINTENDENT WANTS POSITION; thorough paper maker and colorer; accustomed to all grades of stock; good mechanic; long experience; good references. Address SUPERINTENDENT, care Journal.

CYLINDER MACHINE TENDER DESIRES a situation; accustomed to light and heavy weight; references as honest, sober and capable. Address A. D., care Paper Trade Journal.

WANTED FOREMAN—Two machine mill; thorough knowledge working all kinds stock into all grades manilla papers; state salary; references. Address MANILLA, care Paper Trade Journal.

SITUATIONS WANTED BY FIRST-CLASS superintendents, machine tenders and engineers; worked on all grades of paper; both slow and fast running machines; can furnish best references if required. Apply to EAGLE LODGE No. 1, Brotherhood of Paper Makers, Box 672, Holyoke, Mass.

FOR SALE—TWO TONS CLEAN SIZING, SUCH as calf heads and trim; well cured in lime and flint dry. MANUFACTURER, Box 116, Highview, N. Y.

AN INGERSOLL STEAM PRESS, WITH countershaft, pulleys and belting complete, suitable for rags, papers, will be sold cheap; also rag duster. Address W. L., care Journal.

FOR SALE CHEAP—THE WHITEMAN PULP and paper mill at Dansville, N. Y., fireproof; water and steam power and electric light; two railroads. For price, terms and cut of building address H. B. HATHAWAY, Rochester, N. Y.

FOR SALE—A SECOND-HAND COPY OF HOFmann's Treatise on Paper Making in good condition for sale cheap. For further particulars address URGENT, care Paper Trade Journal.

NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1891. C. F. HANMER, Secretary.

FOR SALE.

A Three Shaft Manning Winder Will be sold cheap.

THE MOORE & WHITE CO., 15th street and Lehigh avenue, Philadelphia.

DISSOLUTION OF PARTNERSHIP.

Notice is hereby given that the partnership of Wood & Trout, manufacturers of paper in the city of Wilkes-Barre, has been dissolved, the entire interest of S. Edgar Trout, one of the members of said firm, having been disposed of by judicial sale.

JOHN G. WOOD.

PAPER MILL MACHINERY.

One 84 inch Fourdrinier part to paper machine complete, with Gould screen.

One 74 inch Fourdrinier machine complete, Gould screen; gun metal press rolls, 15x75 inches; eight iron dryers, 36x72 inches; stack of nine chilled rolls, 72 inch face; upright reel and cone pulley cutter; Bess slitters.

One Gould screen, eight plates, 10x36 inches.

One Gould screen, eight plates, 12x40 inches.

One Barber's suction.

One 70 inch machine complete, Gould screen, Fourdrinier wire, 70x33 inches; first and second presses; eight iron dryers, 36x65¾ inches; stack five chilled rolls, four 12 inches, one 16x64 inches face; upright reel, slitter and winder.

Two new 1,000 pound Holyoke Machine Co. beaters, wood tubs.

One 1,000 pound iron tub beater.

Six beating engines, 36 inch roll, iron tubs.

One 1,200 pound Horne patent engine, new.

One rotary, 7x20, double riveted, 9-16 inch shell.

Three Scott & Roberts hydraulic pulp grinders.

Three Jordan engines.

Two rag cutters and duster.

Four iron dryers, 28x72 inches.

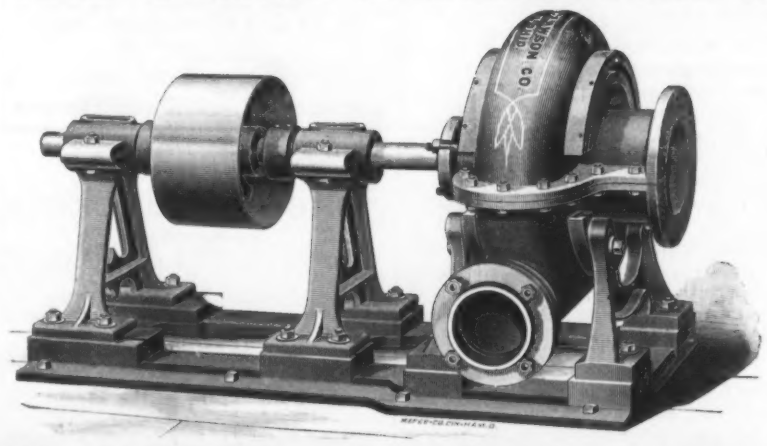
Send for catalogue of machinery, steam engines and boilers.

1,000 feet shafting, 2 to 6 inches diameter; 500 feet belting, 5 to 48 inches wide.

Parties wanting tools, stock or machinery used in a paper or pulp mill can find it here at a bargain.

F. H. DAVIS & CO., Exchange B'd'g, Boston, Mass.

THE BLACK & CLAWSON CO., MANUFACTURERS OF Paper Mill Machinery,



FOURDRINIER,

HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.

JORDAN ENGINES.

Jordan Engines Refilled.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

REVOLVING REELS AND STACK REELS.

FOR PARTICULARS ADDRESS

THE BLACK & CLAWSON CO., Hamilton, Ohio.

WE MAKE THE ONLY PERFECT DRYER.

MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

TREASURY DEPARTMENT, OFFICE OF THE Secretary, Washington, D. C., April 7, 1894.—Sealed proposals for furnishing Bank Note Paper of the highest quality, containing the distinctive features of the paper now in use by the Department for United States Notes, National Bank Notes, Bonds, Certificates, Checks and other Securities, except Internal Revenue Stamps, for the fiscal year ending June 30, 1895, will be received at this Department from manufacturers of bond, bank note and other fine papers until 1 o'clock P. M. Thursday, May 10, 1894. Full information upon this subject will be given upon application to this office, where samples of the paper required may be examined. Proposals should be addressed to the Secretary of the Treasury, marked "Proposals for Distinctive Paper." The Secretary reserves the right to reject any or all bids. JOHN G. CARLISLE, Secretary of the Treasury.

A FINE OPPORTUNITY

TO GO INTO BUSINESS.

To a company that understand the coating business an offer will be made to furnish a fully equipped plant, ample room with plenty of power. Well situated for future business. Will either lease plant or take an interest in the business. Parties answering advertisement must be in position to furnish all necessary capital to buy stock and carry accounts. Address A. B. C., care of Journal Office.

SPECIAL NOTICE.

Hofmann's Treatise ON Paper Making.

IN 1873—twenty years ago—Carl Hofmann first published his *TREATISE ON PAPER MAKING.* He was then, and for some years had been, a practical paper maker in America. His experience in the trade abroad, as well as in this country, and his technical education and knowledge enabled him to be specially adapted for the work; hence "Hofmann's Treatise on Paper Making" took high rank at the start, and soon became *a* standard work on the subject throughout the world. It was published in English, German and French, and had wide sale in all three languages.

As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,300 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

We have contracted to translate and publish the work in English in twenty parts, of about eighty pages each, at intervals of not less than sixty days, and at a cost of *one dollar cash, in advance, for each and every part.* When the enterprise is completed the twenty parts will sell, *unbound*, for *twenty dollars.* The binding will be extra. Subscribers can themselves have the parts bound, or have us bind them at extra expense; but it should be noted that no money will be saved by waiting until THE TREATISE is completed and bound.

We shall announce within some weeks when "PART ONE" will be ready for delivery.

Orders can be placed now, or later if preferred; and subscribers can send *one dollar* or *six dollars*, which latter would pay for six parts during a year.

We cannot accept any order that is not accompanied by the cash.

Every manufacturer of paper or pulp, every superintendent of a mill, every machine tender, every man whose life-work consists in making or selling paper in the United States, Canada, and all over the world, except Great Britain and the Continent of Europe, should send us his subscription. We will furnish each part postpaid. We will print and ship the English Edition for the European market, but cannot accept orders therefrom.

HOWARD LOCKWOOD & CO., Publishers, New York.

FOR SALE.

Fourdrinier Machine. New and Modern; wire, 92 inches wide, 45 feet long; forty 2½ inch table rolls, three brass suction boxes; gun metal and rubber press rolls; thirteen dryers, 48×88; nine stack calenders, reels, cutter; Manning winder; cone pulley driving train.

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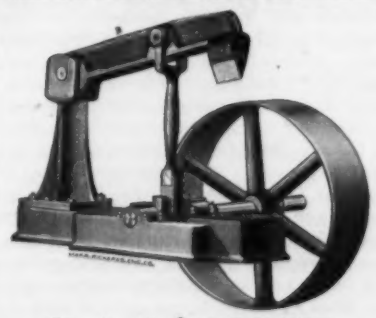
SKYLIGHTS

Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

THE CLOVER LEAF VENTILATOR FOR MILLS, FACTORIES AND DYE HOUSES.

Made of galvanized iron or copper. Strong upward draft; exhausts foul air, odors, gases, steam, etc. Perfectly storm-proof. Send for illustrated circular.

E. VAN NOORDEN & CO., 383 Harrison Ave., BOSTON, Mass.



C. A. LAWTON,

DE PERE, WIS.,

Manufacturer of Barkers, Splitters and Saws for Pulp Mills. Shafting and Pulleys a Specialty.

Write for Prices.

Don't Guess at Important Matters.

Bowsher's SPEED or MOTION INDICATOR IS INDISPENSABLE

In obtaining a UNIFORM speed of machinery, and is one of the most PROFITABLE little devices ever put in a mill. Will pay for itself in 30 days. Dial 12 in. in diameter. Weight 10 pounds.

N. P. BOWSHER, South Bend, Ind.

At World's Fair: With the Paper Making Exhibit.

Curtis Patent Damper Regulator

Is Simple in Construction, Reliable, and Close-working.

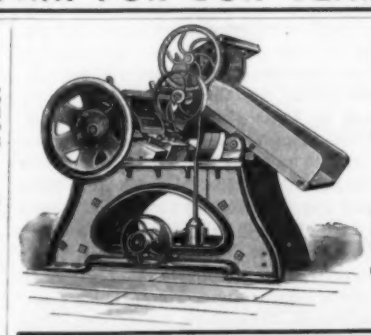
GUARANTEED to change the motion of the damper from one direction to the other on variation of one pound steam pressure.

1,200 IN DAILY USE.

MANUFACTURED BY THE

D'ESTE & SEELEY CO., 29-33 Haverhill St., Boston.

New York: 109 Liberty St. Chicago: 218 Lake St.



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Successors to E. P. TANNER'S

FOUNDRY AND MACHINE WORKS,

LEE, MASS.,

MANUFACTURERS OF

New and Improved Spiral Knife Rag Cutters.

Cylinder Paper Machines, Rag Engines, Paper Cutters, Super and Machine and Chilled Iron and Paper Roll Calenders, Stuff and Fan Pumps, Shafting, Pulleys, Gearing and Paper Mill Machinery generally.

DO YOU WANT A . .

RAG CUTTER,

TO CUT ROPE, JUTE BUTTS, BAGGING, OR ROOFING PAPER STOCK?

IF SO, WRITE TO

TAYLOR, STILES & CO.,

RIEGELSVILLE, N. J.

APPLETON WOOLEN MILLS.

MANUFACTURERS OF

PAPER MAKERS FELTS.

The only Mill west of Ohio.

We have demonstrated our ability to compete in

Fourdrinier, Press, Cylinder and Pulp Felts,

and solicit a trial order, especially for writing and book papers.

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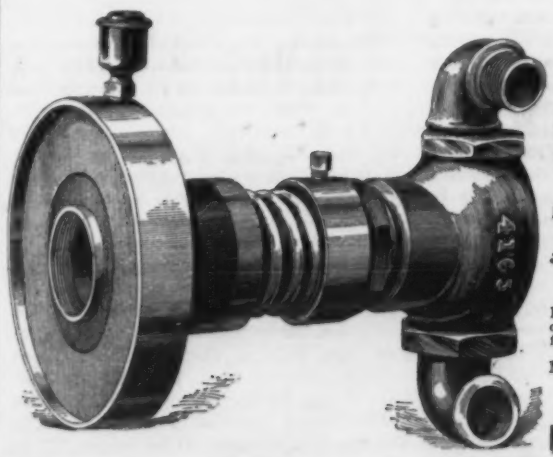

The ROACH PATENT METALLIC Steam Joint

Patented May 13, 1884, and Sept. 8, 1885.

For Rotary Paper Dryers and Revolving Cylinders.

3,000 NOW IN USE on PAPER MACHINES.

Does away with Packing the Dryers. No Leakage of Steam. Requires No Attention and will Last for Years.

Medal Awarded at World's Fair.

Send for Circular and Price List.

M. J. ROACH, ANDERSON, IND.

RIVERSIDE PAPER CO., HOLYOKE, MASS. — "MAGNA CHARTA" BOND, "PURE LINEN STOCK" LINENS (WHITE WOVE AND CREAM LAID), "DUNDEE RECORD" LEDGERS.

TICONDEROGA PULP AND PAPER CO., TICONDEROGA, N. Y. — WHITE MANILLA, POSTAL LINEN, MAYFLOWER LINEN, BOOK AND NEWS.

FRANKLIN PAPER CO., HOLYOKE, MASS. — ANIMAL SIZED AND SUPERCALENDERED BRISTOL BOARD, BOX BOARD, DUPLEX AND COVER PAPERS, IN WHITE, TINTS AND COLORS.

JUDSON & WILLIAMS,

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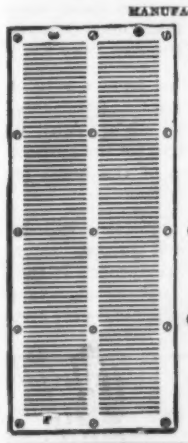
MANUFACTURERS OF



SCREEN PLATES

—OF—

BRASS

—OR—

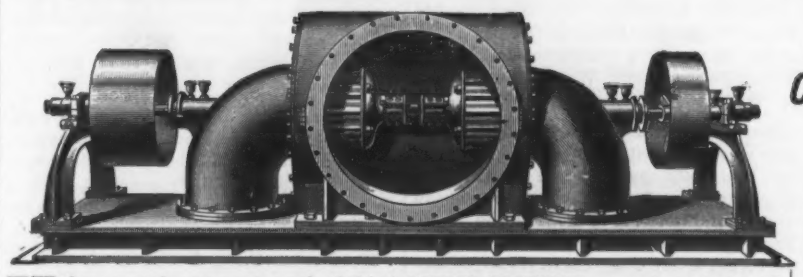
CAST METAL.

REPAIRING

OLD SCREEN PLATES

A SPECIALTY.

THE VICTOR TURBINE.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines either single or in pairs on horizontal shafts and where the situation admits of their use we recommend them.

UPRIGHT or HORIZONTAL.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

CYLINDER OR REGISTER **GATE.**

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT.
15 inch.	18.06	30.17	.8982
17½ inch.	17.96	36.35	.8980
20 inch.	18.21	49.00	.8532
25 inch.	17.90	68.62	.8584
30 inch.	11.65	52.54	.8676
35 inch.	17.29	133.19	.8497
40 inch.	16.49	148.93	.8253
48 inch.	15.51	179.29	.8202

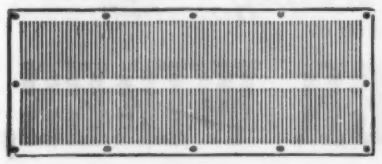
Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO THE

STILWELL & BIERCE MFG. CO., DAYTON, OHIO, U. S. A.



OLD PLATES RENEWED

World's Fair

HIGHEST AWARD

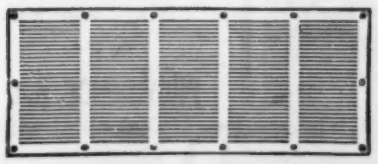
TO

SCREEN PLATES of SPECIAL BRASS,

MADE BY THE

Western Screen Plate Works,

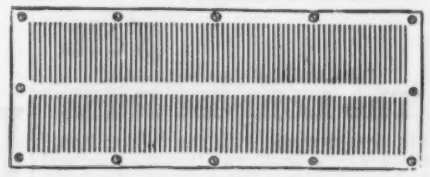
545 Eldorado St., APPLETON, WIS.

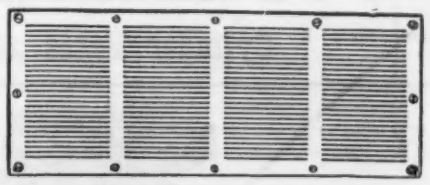


ANNANDALE

Screen Plate Co.,

PATERSON, N. J.





Manufacturers and Repairers of

SCREEN PLATES.

Our new Plates are made of the **VERY BEST METAL,** and for price and durability cannot be surpassed.

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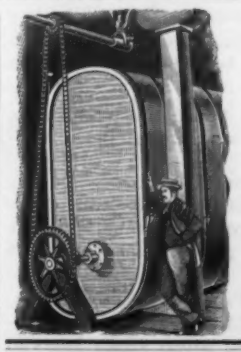

THE SAVAGE PERFECTING STUFF CHEST.

Fits into a narrow space and requires but little power to operate.

It has a double agitating motion, moving the stuff in different directions, which prevents "floating."

It empties itself clean; no waste of stuff and protects from dirt.

Quantity of stuff in chest always shown by indicator.

PATENTED AND MANUFACTURED BY

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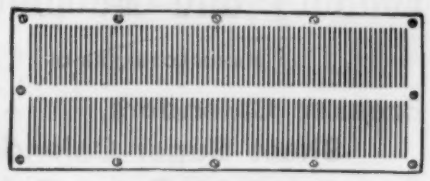
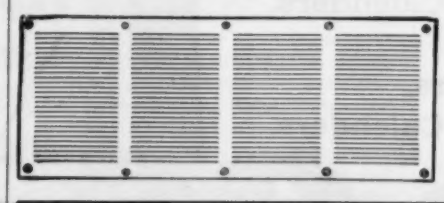
MANUFACTURER OF

Screen Plates





OF BRASS OR CAST METAL,

AT PRICES

THAT CANNOT BE SURPASSED.

BEST STOCK USED.

Write for Prices and Gauges.

All Work Warranted.

THE EVANS FRICTION CONES

Are running forty-four (44) of the best paper machines in this country and in Europe, transmitting from 20 to 40 horse power each. Thousands of small Cones, hanging and standing, in operation, driving all kinds of machinery. Send for Catalogue "G."

EVANS FRICTION CONE CO., 85 Water St., Boston, Mass.

TRUCKS! TRUCKS!

Mounted on Rubber or Iron Wheels.

TRUCKS MADE TO ORDER.

Write for Prices.

RUBBER WHEELS, IRON WHEELS.

Casters of All Kinds.

CATALOGUES FREE.

GEO. P. CLARK,

Box R. Windsor Locks, Conn.

Paper Makers, Attention!

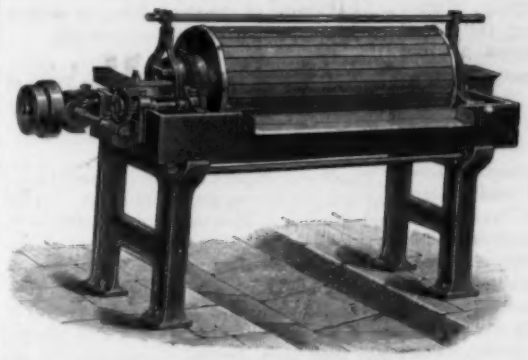
Do you thoroughly gauge your Screen Plates to see if they are accurately cut? Why use imperfect plates when you can procure the best by sending your orders for new or old work to the APPLETON SCREEN PLATE COMPANY who are at the front as screen plate makers and repairers, using nothing but the best of brass and bronze in their plates and making accuracy of work their motto.

Appleton Screen Plate Company,

APPLETON, WIS.

THE "WANDEL"

Patent Rotary STRAINER.



ADVANTAGES:

Regular output of Pulp.
Automatic Cleaning of the Slots.
Automatic Removal of all knots and impurities, thus avoiding their accumulation before the slots.
Avoidance of Stoppage.
Large working ability.
Small requirement of room.
Easy change of cylinder if different widths of slots are wanted.

SIMPLE,
DURABLE,
PERFECT.

Less Power.
Low Cost.
Suitable for all classes of Paper.

The "Wandel" Patent Rotary Strainer is delivered ready for use, with or without the bearing frame. It is working in most of the Paper Mills of Europe and in the THILMANY PULP AND PAPER MILLS, KAUKAUNA, WIS.

FOR FURTHER PARTICULARS APPLY TO

CHR. WANDEL, Reutlingen, Germany.

Or GEORGE HAMILTON, 74 Wall St., New York.

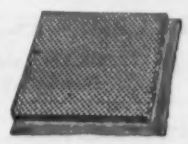
F. M. SPAULDING

CONTRACTS FOR

News and Book Paper in Quantity.

40 State Street, Boston, Mass.
506 Inter-Ocean Building, Chicago, Ill.
News Building, Indianapolis, Ind.

SAMPLES AND QUOTATIONS FURNISHED UPON APPLICATION.



IMPERIAL ASBESTOS SECTIONAL PIPE

AND BOILER COVERING.

Asbestos Prepared Roofings.

(Specially adapted to Paper Mills).

Chicago, Ill. **H. F. WATSON COMPANY,** Erie, Pa.

THE MORRISON & HERRON TESTING SYSTEM.

THE MORRISON & HERRON IMPROVED PAPER TESTING MACHINES.

Three Different Machines

—FOR—

Strength, Thickness and Weight.

A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

Price, complete,	$150.00
Or Strength Indicator,	75.00
Thickness Gauge,	75.00
Paper Scale,	30.00

ADDRESS ALL ORDERS TO

HOWARD L. MORRISON,

1009 Pa. Ave., N. W., Washington, D. C.

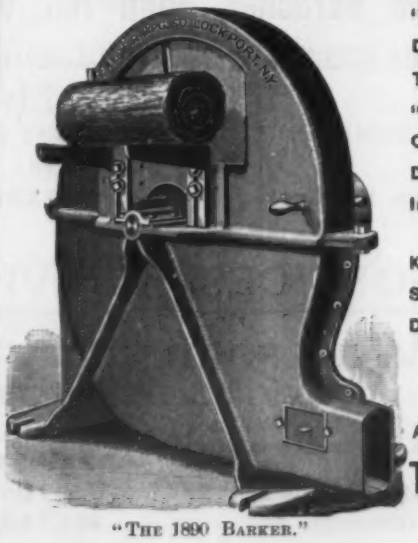
CAUTION.

All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

TREVOR MANUFACTURING CO., LOCKPORT, N. Y.

MANUFACTURERS OF

IMPROVED WOOD PULP MACHINERY.



"THE 1890 BARKER."

"Niagara" Grinders,
Double and Single Splitters,
The "Trevor" Improved Wet Machines,
"1890" and "Giant" Barkers,
Cross Sawing Machines,
Drag Saw Machines,
Improved Pulp Wood Slabbing and Sawing Machines,
Knot Borers,
Stuff Pumps,
Double and Triple Plunger Pumps, for general use in Pulp and Paper Mills.

Write for Catalogue C and Discounts Address

Trevor Manufacturing Co.,

LOCKPORT, N. Y.

Pressure, Vacuum And Pyrites

ACID PLANTS

Of Highest Capacity Manufactured by

WENDLER & CO.

CARTHAGE, N. Y.

Manufacturing News.

EASTERN STATES.

Atterbury Brothers have been making many changes in their Chelsea mills at Greenville, Conn., and on account of many orders for their coated paper they have had to run two of their coating calenders tour work, night and day, for some time past, and expect to run them so permanently.

It is said that the Otis Falls Pulp Company, Livermore Falls, Me., will build a large sulphite fibre mill this season,

The Eastern Manufacturing Company, South Brewer, Me., turned out last week eighty full digesters of sulphite fibre.

Several water powers in Maine are said to be available for paper or pulp making purposes. One is located on the west branch of the Penobscot River, between Twin Dam and Grand Falls, the fall being 120 feet, and several sites being available, with falls of 18, 25 and 20 feet. At Grand Falls there is a natural fall of 40 feet. There are railroad facilities and an abundance of spruce near these localities.

The Katahdin Pulp and Paper Company, Lincoln, Me., has put in two 72 inch wet machines built by Wendler & Co., Carthage, N. Y.

The Richards Paper Company, South Gardiner, Me., has put forty-one patent steam joints on its 41 dryer machine. These joints are supplied by M. J. Roach, Anderson, Ind.

The Carew Manufacturing Company, South Hadley Falls, Mass., has put in a "Gotham" screen, built by the Brownville Iron Works, Brownville, N. Y. This screen will be used in connection with the 80 inch Fourdrinier machine.

The Lydall & Foulds Paper Company, Manchester, Conn., has begun to run on full time, which it has not done for several months past. The loss by fire of the stock of the American Strawboard Company in New York on Tuesday will be of advantage to it.

The Anchor Mills Paper Company, Windsor Locks, Conn., is starting out in a way to make some of the older manufacturers envious. Since starting its new plant it has been very busy, and is making a very fine line of tissue copying papers.

The Hartford Manilla Company, Hartford, Conn., has been running full time during the recent business depression. Its orders in paper for Government envelopes have kept it busy.

MIDDLE STATES.

The International Pulp Company has purchased a large tract of land and water power near Gouverneur, N. Y., and plans are now being made for the construction of an immense talc mill on the newly acquired property. The building will be constructed entirely of steel, iron and stone. There is a fall of 47 feet and the drilling, conveying &c., will be done by electric power. The company has purchased the patents covering the Griffin mills used in preparing the talc. The company has just re-elected its entire board of directors and officers.

The Cascade Paper Mill, Penn Yan, N. Y., formerly run by Charles J. Cave, which was bought in by the bank, and started up under the supervision of Mr. Fox, of Fox & Curtiss, one of the directors in the bank, has been shut down.

F. E. Robinson, Carthage, N. Y., has put in two "Gotham" screens, to be used on ground wood. These machines were built by the Brownville Iron Works, Brownville, N. Y.

A new screen invented by C. H. Campbell and built by Wendler & Co., Carthage, N. Y., will soon be in operation at the mill of the Racquette River Paper Company, Potsdam, N. Y.

John Lang, Philadelphia, Pa., has put in twenty-one patent metallic steam joints for his new 80 inch machine. These were supplied by M. J. Roach, Anderson, Ind.

Power is being contracted for at Niagara at from $8 to $20 per horse power per year of 365 days, counting 24 hours a day. The average cost of steam power is said by the United States Census to be $36 per horse power per year of 313 days at ten hours per day, the cost per hourly horse power being 1.15 cents for steam against .23 of a cent for the water power, even at the highest price. The advantage of a twenty-four hour day is not great to the average manufacturer, but the yearly rate shows a large percentage in favor of the water.

The High Falls Sulphite Pulp and Mining Company, Potsdam, N. Y., has put in two of Wendler & Co.'s 72 inch wet machines and has given an order for another.

The J. & J. Rogers Company, Ausable Forks, N. Y., is about ready to start up. It has built a new sulphite plant about 2½ miles from the village, and has laid a private track connecting with the Plattsburgh branch of the Delaware and Hudson Railroad Company, thus avoiding all hauling, and saving much expense. This company has put in three 72 inch wet machines built by Wendler & Co., Carthage, N. Y.

G. B. Rommel, Pittston, Pa., has shut down his mill for repairs. The work will take about ten days.

O. E. Martin, Norwood, N. Y., has put in a 72 inch Wendler & Co. wet machine.

Arrangements to build a pulp mill at Hinckley, N. Y., are in progress.

It is reported that one of the paper making plants at Marseilles, Ill., will be removed to Warren, Pa.

The pulp mill at Fort Miller, N. Y., will soon start up. The grinders are being set.

The tin box stolen from the safe of James Peters & Co., of the Loyalhanna Paper Mills, Latrobe, Pa., on the morning of April 1, was recovered on Monday last, the $500 funding bond, policies, notes, &c., being intact, but the money having been appropriated. The box was found hidden in an ash pile at Loyalhanna by a section repair hand.

The Naponoch Paper Mills, Napanoch, N. Y., have been again started up.

WESTERN STATES.

C. B. Pride has leased the mill of the Union Pulp Company, Kaukauna, Wis. He will put in four grinders and start up as soon as possible.

The Elkhart Paper Company, Elkhart, Ind., has ordered from M. J. Roach, Anderson, Ind., eighteen patent steam joints to be used on its large Fourdrinier machine.

The "B-M-A" Manufacturing Company, which has just been organized, will have works at Toledo, Ohio, for the manufacture of a new material in the paper pulp composition line, for which parties interested have recently been granted letters patent. The material, while in a plastic state, is molded or pressed into suitable forms for floor tiling and other uses; and a superior roof covering is also made. As a plastering for walls and ceilings, it promises to be in advance of anything previously on the market, and has successfully stood the severest test during the past winter. The company will place this product on sale at a price not to exceed that of common hair and lime plaster.

An effort is being made by the Commercial Club, of Omaha, Neb., to secure the location of a paper mill at that city.

The Consumers' Paper Company, Muncie, Ind., last week started fifty-one steam joints on its machine and rotaries. These joints were made by M. J. Roach, Anderson, Ind.

The Porter Paper Company, Akron, Ohio, has brought suit against William A. Taylor and Charles A. Howland for $25,000 damages. William Patterson, president of the company, recently took out patent letters on a machine for making paper bags. Taylor & Howland are interested in another large paper mill, and the plaintiff claims that they have formed a conspiracy to unlawfully gain possession of the valuable patent. Damages in the sum named are asked for on account of the actions of Taylor and Howland.

CANADA.

John Bertram & Sons have ordered from M. J. Roach, Anderson, Ind., twenty-one patent steam joints to be used on twenty-one dryers.

Obituary.

JONES WARREN WILDER.

Jones Warren Wilder, one of the founders and for many years president of the Butterick Publishing Company, died at No. 123 West Seventy-seventh street April 10 after a lingering illness. Mr. Wilder was born in Sterling, Mass., in 1832. Thirty years ago he came to New York and became associated with E. Butterick and A. W. Pollard in starting a fashion publishing business at No. 192 Broadway. Several years ago he retired from active participation in the business and gave his attention to scientific agriculture, conducting experiments on farms on Long Island, in New Hampshire and in Texas.

John Gilbreth, a millwright in the paper mill of Orrs & Co., Troy, N. Y., died last Sunday, aged about sixty years. He had been in the employ of the firm for forty years, and his son is now a machine tender in the mill.

W. S. Stinehart, of the firm of Rand & Stinehart, printers, Boston, Mass., is dead.

The Dayton Globe Iron Works Company, Dayton, Ohio, has got out a new catalogue and price list of power transmitting machinery, gearing, shafting, pulleys, couplings, hangers, boxes, floor stands, collars, &c., of which it is making a specialty. The list is very full and should be in the hands of all power users. Send for a copy of the catalogue.

General Notes.

Doran Brothers, stationers, San Bernardino, Cal., have been attached for $755.

Bids for furnishing stationery to the United States Marine Corps will be opened at the office of the Quartermaster, United States Marine Corps, Washington, D. C., on May 7.

Postmaster General Bissell had a conference on April 9 with the unsuccessful bidders for the stamped envelope contract, who came to protest against the awarding of the contract to James Purcell, of Hudson, N. Y. The Postmaster General decided that under the recent act of Congress in regard to supplies for the various executive departments the bids recently opened at the department were illegal. He will therefore reject all of them and readvertise for proposals for furnishing stamped envelopes under the new law.

Proposals for furnishing registered package, tag, official and dead letter envelopes will be opened at the Post Office Department, Washington, until 12 M. on Wednesday, April 25.

A. Wertheim & Co. have just sent abroad the ship J. D. Everett, bound for Fleetwood, England, with 53,166 bales of moist ground wood, weighing 5,870,751 pounds. This is probably the largest cargo of pulp ever loaded.

Henderson, Craig & Co., Limited, London, England, have acquired the wood pulp department of the business of G. Schenkenwald & Co. of the same city, the senior member of that firm going into the directory of the purchasing company.

Sealed proposals for reproducing and furnishing copies of post route maps every three months during the next fiscal year will be opened by the Post Office Department at Washington on Monday, May 7.

Over $3,000 were stolen from a safe in the store of A. C. McClurg & Co., publishers, &c., Chicago, on Friday night, April 6. The money had been drawn for the purpose of paying the employees of the house on Saturday morning.

Sealed proposals, in triplicate, will be opened at the office of Chief Quartermaster, Department of the East, Governor's Island, N. Y., on May 10, 1894, for the necessary printing required during the fiscal year ending June 30, 1895.

THE "Hamilton" Felt.
"Best and Most Economical Made."
The Longest Runs
are always made with the "Hamilton." Once accustomed to its use, you will buy no other. Prices as low as inferior makes are sold at.
In ordering mention kind of stock used, quality of paper made and speed of machine.
Shuler & Benninghofen, Hamilton, O.

The W. S. Tyler Wire Works Co.,
CLEVELAND, OHIO.
MANUFACTURERS OF
FOURDRINIER WIRES,
Cylinder Faces and Washer Wires.

GRANGER
Foundry and Machine Co.,
MANUFACTURERS OF
Breaker Calenders,
Sheet Super-Calenders,
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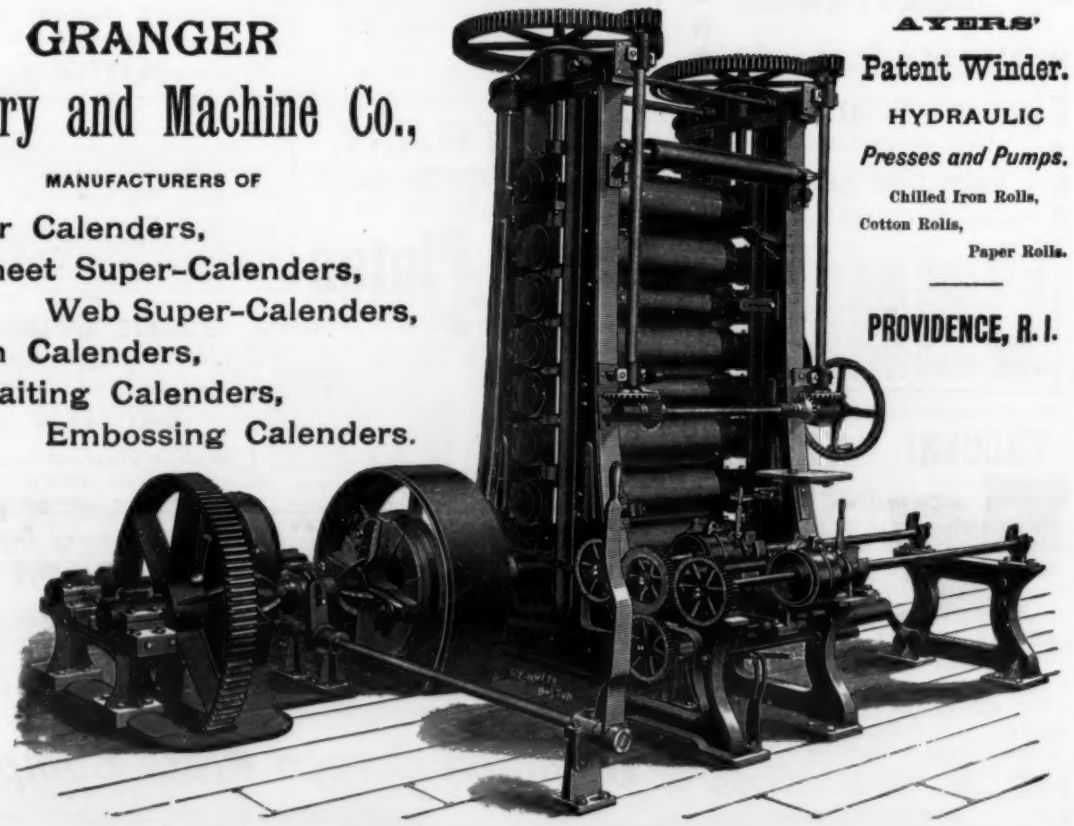
Friction Calenders,
Plaiting Calenders,
Embossing Calenders.
AYERS' Patent Winder.
HYDRAULIC Presses and Pumps.
Chilled Iron Rolls,
Cotton Rolls,
Paper Rolls.
PROVIDENCE, R. I.



The American Talc Co.,
MANUFACTURERS OF A
SUPERIOR QUALITY OF MINERAL PULP OF ALL GRADES,
PROVIDENCE, R. I.
Mines and Mill: FOWLER, N. Y. | Telegraph Address: GOUVERNEUR, N. Y.
NEW MILL. LATEST MACHINERY. STEAM POWER.

THE GENERAL FIRE EXTINGUISHER COMPANY,
CONTROLLING THE INVENTIONS AND APPARATUS
PERTAINING TO AUTOMATIC SPRINKLERS OF
Frederick Grinnell, William Neracher, John Hill, William Kane and others.
INFORMATION AND PROPOSALS FURNISHED AT THE SEVERAL DEPARTMENT AGENCIES, NAMELY:
NEW YORK: 413 Broadway. | BOSTON: 173 Devonshire Street.
PHILADELPHIA: Mutual Life Building. | BUFFALO: City Bank Building.
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CLEVELAND: Society for Savings Building. | Also at WARREN, OHIO, and COLUMBUS, GA.
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EXECUTIVE OFFICES, PROVIDENCE, R. I.

GEO. WOOLFORD, Manufacturer of all kinds of
CEDAR TUBS FOR
PAPER MILL WORK,
DRAINERS,
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In sending for estimates state if measurements are inside or outside and thickness of wood desired.
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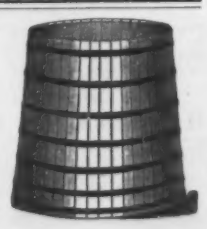


Typothetæ of the City of New York.

NINTH ANNUAL MEETING — ELECTION OF OFFICERS.

The ninth annual meeting of the Typothetæ of the City of New York was held at the rooms of the society, 19 Park place, on Tuesday, April 10. Douglas Taylor presided. The election of officers re

PRESIDENT THEODORE L. DEVINNE.

sulted in the choice of the following named gentlemen:

President—Theodore L. DeVinne.
Vice-Presidents—Douglas Taylor, Joseph J. Little.
Secretary—E. Parke Coby.
Recording Secretary—W. W. Pasko.
Treasurer—Horace G. Polhemus.
Entertainment Committee—Douglas Taylor, Theo. B. DeVinne, R. R. Ridge, Edward Ralph, Horace Holden.
Arbitration Committee—John Polhemus, F. L. G. Gilliss, Chauncey Holt, Francis E. Fitch, A. H. Kellogg.
Members of Executive Committee—Peter DeBaun, B. H. Tyrrel, James A. Rogers.
Trustees—E. Parke Coby, R. Harmer Smith, Wm. Pinkney Hamilton, James A. Rogers, David Williams.

The recording secretary, W. W. Pasko, made the following report:

"During the year just closed we have had to mourn the death of several of our most esteemed members. The list embraces Hermann A. Rost, for many years a leading German printer of this city, whose office was a model one; Martin B. Brown, the printer for the city, a man of large heart and kindly impulses, who had been very successful in carrying on his business, and Joseph Keppler, who possessed great artistic abilities, and who was no less beloved among his friends than admired by those who saw his work. The Rev. Charles F. Deems, for many years an honorary member and an able and eloquent minister of the Gospel, died at a ripe old age. Nor should Mr. T. S. De Wolfe be forgotten. Although not a member of our society at the time of his death, he had acted as the representative of the Martin establishment ever since the death of our late president, and had retired from participation among us only six weeks before his decease.

"The conditions of trade during the past year have been bad. It was not very good in the spring, declined in June and seemed almost entirely stopped from the middle of July till the middle of November. There was for a while a practical suspension of specie payments by the banks, and a multitude of commercial and manufacturing establishments succumbed, including among others some of our own members. Although better than it has been, trade is not up to its usual level, and is likely to be much depressed during the remainder of the spring and the whole of the summer. Accompanying this is to be noted the lessening of the prices of commodities necessary for printers. Type is lower than ever before, and paper and ink have also fallen very much. The principal change in the art last year seems to have been in the matter of type composing machines. While they have not yet been very largely introduced into book offices, a certain form of them has so increased in popularity that its manufactory is months behind on its orders, and it is undoubted that before long every daily paper will require something of this kind. The *Tribune*, *Herald*, *World*, *Recorder*, *Times*, *Staats-Zeitung*, *Press* and *Journal of Commerce* are principally set by these labor-saving devices, and they have been ordered by the *Sun*, each establishment saving from $500 to $1,500 a week by their use. Improvements have been made in those intended for use with type, and it is said that Converse, of Louisville, has invented a justifying machine which is entirely automatic. Concurrently with the introduction of these machines comes the weakening of the power of the Union in its strongholds, the daily papers. It is believed that a reduction in the piece price upon them will soon follow.

"The dullness that has been felt in New York prevailed throughout the entire country. As it was known to be real, little difficulty has been met with in regard to new or exorbitant demands by unions. The Pittsburgh strike, which cost the International Typographical union over $70,000, was formally declared off in September last, and an attempt to shorten hours in Albany against the wishes of employers was withdrawn after a struggle of two or three days. No strike or difficulty of importance has occurred in New York city.

"The library of the society has now received the books provided for by the will of William C. Martin. They have been carefully selected by Mr. DeVinne, your president, and embrace almost all the most valuable works upon the practice of the art, as well as many illustrating its origin, history or development. The library also contains lexicons of Greek, Latin, French, Spanish and German, concordances and English dictionaries, among the latter the Century Dictionary, probably the largest and most difficult book, looked at from a printer's standpoint, ever issued from the American press. Among other masterpieces which are now among the collection are Barlow's 'Columbiad,' the chief work of the greatest American printer of the early part of the century, William Fry, and Bodoni's Lord's Prayer in 150 languages and the Specimen Book of his printing office. Mr. DeVinne has supplemented the books he has purchased with others from his own collection, and Mr. S. P. Avery, an enthusiastic lover of good books, has given us a large number, one package of which came this morning and has not been opened. We have also obtained a magnificent bookcase upon Mr. DeVinne's order. He has not yet sent in the cabinet maker's bill to the society, though I understand it was long since paid.

"By a resolution of this body, it was resolved that a committee consisting of Messrs. Hamilton, Coby, Taylor, Tyrell and Ralph should be instructed to find new quarters. After they had been obtained the choice was ratified, and the committee was given authority to remove the effects of the society to the new location and to fit it up properly. Since the last monthly meeting the committee worked assiduously in the matter, and by giving a dinner at Morello's, the profits of which inured to the fund, have succeeded in obtaining considerable money. The committee has formed excellent plans, and moving into their new quarters will begin very soon.

"A gratifying increase in the number of members has been manifested this year, and, with plans which are in contemplation, it is thought will soon add much to its membership.

"The meeting of the United Typothetæ in Chicago last year was fully attended, although at a time of great pecuniary distress. There was much that was valuable to be seen at the Fair, and the deliberations of the society evolved much that was good. The hospitality of the Chicago printers was boundless, and will serve to knit still closer the bonds of union between them and the other members of the trade. It was resolved to meet this year at Philadelphia."

The committee in charge of the dinner on March 29 reported profits of $483.50, and has raised about $100 more from other sources, making nearly $600 on hand for fitting up and moving into the new rooms of the society in the Downing Building.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
F. Lane & Co., Portland, Me	$600
Advertiser Newspaper Company, Boston, Mass.	300,000
Edwin B. & Clarence D. Washburn, Boston, Mass. (B. S.)	1,400
H. T. Killain, Somerville, Mass.	345
P. R. Wagor & Co., Springfield, Mass.	2,000
R. F. Kernan, Worcester, Mass.	900

MIDDLE STATES.

Bernhard Klein, Brooklyn, N. Y.	700

WESTERN STATES.

Harry J. Martin, Fort Dodge, Ia.	150
Sneltje & Co., Sioux Centre, Ia.	100
Anna S. Dworak, Geneva, Neb.	615
Fassett-Mickel Printing Company, Lincoln, Neb	217
Frank Langpaul, Omaha, Neb. (B. S.)	440
F. B. Gregg, West Superior, Wis.	347

SOUTHERN STATES.

James Havely, Knoxville, Tenn. (T. D.)	500
William H. Creed, Kansas City, Mo.	300

CANADA.

S. E. Gallagher, Nanaimo, B. C.	1,800

Accidents.

Charles Bennett, employed in the mill of the Glens Falls Paper Mill Company, Glens Falls, N. Y., had his left hand caught in one of the presses on April 8 and lost four fingers, which had to be amputated.

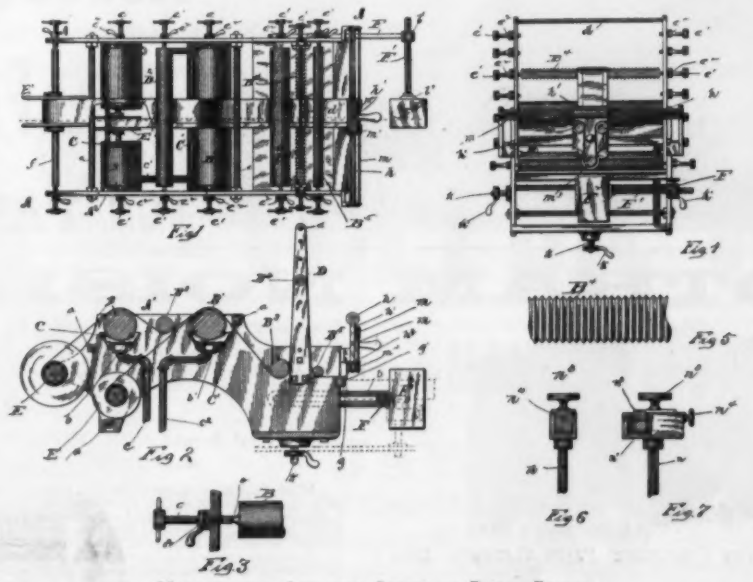
On April 6 a 6 ton boiler, which was being placed in position at the Utility Paper Mill, Hartford City, Ind., toppled over, crushing William B. Price, the straw buyer for the company. There were three other men under the boiler when it began to fall, but all got from under except Price, who later died from the injuries thus received.

Machine for Applying Strips to Paper Boxes.

The accompanying cut illustrates a new box stripping machine especially adapted for use in the manufacture of paper boxes.

Figure 1 is a plan view of the machine; Fig. 2 is a sectional view taken on the line X X in Fig. 1; Fig. 3 is a detail view of one of the rolls and its bearings; Fig. 4 is a front elevation of the machine; Fig. 5 is a detail view of the paper supporting roll; Figs. 6 and 7 are details of the adjustable head used in connection with the supporting block.

The main frame A A consists essentially of side pieces A' A^2, connected together at suitable intervals by connecting rods *a*. Extending transversely across the frame are the pasting rolls B B', each of which is arranged immediately above the paste or glue pan C C', so that the lower periphery of the roll extends into the pan. These paste or glue pans C C' are each preferably formed with a lower compartment *b b'*, to which steam is admitted through a pipe, *c*, which leads into the compartment *b* and thence to compartment *b'*, through a pipe, *c'*, and is discharged through pipe c^2, so that a circulation of live steam can be secured to keep the glue or paste hot in the pans C C'. Located between the respective paste rolls B B' is a supporting roll, B^2, and



MACHINE FOR APPLYING STRIPS TO PAPER BOXES.

in front of and below the roll B' is also a supporting roll B^3. At each side of the main frame near the front are two upwardly projecting standards D D, connected at the top by a suitable connecting rod, *d*, and provided at intervals with suitable bearings for a supporting roll, B^4; and in front of the standards and substantially on a level with the roll B^2 is another supporting roll, B^5. Each of the rolls thus described is preferably provided at each end with a cone shaped bearing point, *e*, adapted to fit in a cone shaped opening in the end of a screw threaded rod, *e'*, which extends through a suitable opening in the main frame, and is further provided with a lock or jam nut, e^3, means being furnished by which all lost motion in the rolls may be thus taken up and a suitable amount of friction be applied thereto to furnish the necessary tension to the rolls in their operation. At the rear of the machine and back of the first pasting roll B is a rod or shaft, *f*, which carries a paper reel, E, a similar shaft and reel, E', being located behind and below the auxiliary pasting roll B'.

At the front of the main frame is a transverse bar, *g*, which carries a steel plate, *g'*, the top of which is substantially on a level with the bottom of the roll B^2. Extending transversely across the frame and supported in suitable brackets at each end by the frame above and slightly in front of the bar *g'* is a rod, *h*, which carries a traveling frame, *h'*. In this frame is journaled a revolving knife, h^2, which is so arranged that as the frame *h'* is moved laterally across the machine on the rod *h* the knife is revolved in contact with the steel plate *g'*, and thus forms a cutter to sever the paper which comes over the pasting rolls and through the machine. On each side of the main frame and projecting laterally therefrom on the outside of the respective side pieces, and also centrally from the bottom of the frame near the front, is a screw threaded stud, *k*, having a hand or thumb nut, *k'*, this stud being adapted to receive an adjustable projecting arm, F, having a slotted opening, *l*, adapted to fit over the stud and by means of which the arm may be adjusted to any desired position and be held in the proper position of adjustment by the thumb nut *k'*. This arm F is perforated at its outer extremity to receive a rod or shaft, F', which extends laterally through the end of the arm F, and is adapted to be held in any desired position of adjustment therein by a hand screw, *l'*. Jurnaled loosely on the outer end of the rod F' is a bearing plate, l^2, to which is secured a supporting block, F^2, the block being rigidly secured to the bearing plate in any suitable manner so as to turn freely on the rod or shaft F'.

The operation of the device is as follows: A strip of paper from the reel *e* is passed over the pasting roll, thence under the supporting roll B^2 and over the auxiliary pasting roll B', under the supporting roll B^3 and over the supporting roll B^4 in the frame D, thence under the supporting roll B^5 and over the plate *g'*, which forms the ledger bar for the cutter h^2. The block F^2 is adapted to receive the box or other article to which the paper is to be applied. The respective rolls being set at the proper tension the the paper is drawn through and passed around the box, the supporting block being turned as desired to accomplish this end. When a sufficient quantity of paper is drawn off the paper is severed by the knife h^2, a new article is placed on the revolving support and the operation is repeated.

In making paper boxes it is frequently desirable that the edges or corners of the box shall be covered with a different character of paper or material. To accomplish this a strip of paper from the second reel E' is carried over the auxiliary pasting roll B' prior to the passage of the paper from the main reel E, the main strip being adapted to overlap slightly the auxiliary strip from the reel E', the strips being thus glued or pasted together as they pass over the auxiliary pasting roll, the main strip having already received the glue or paste for this purpose from the main pasting roll B'. From this point forward the respective strips are passed in one strip and placed directly on the box or other article, thus applying the two strips to the box or other article at one operation. Any number of strips may be thus applied by placing different reels on the supporting shafts *f f'*, and placing the strips so that they will overlap in the manner described.

Any desired means may be employed for revolving the cutter h^2. In that form shown there is a cord or cable, *m*, attached at each end to the side brackets, which support the supporting shaft *h* and pass over suitable supporting pulleys, *m' m²*, on the frame *h'*, and thence downwardly over a sheave or pulley, m^3, on the spindle of the cutter h^2. The cord or cable being stationary the cutter is caused to revolve as it traverses the shaft *h* by the passage of the cord around the respective pulleys.

For covering the tops of boxes and similar articles the arm F is placed on the bottom stud *k*, and the outer extremity is provided with a standard, *n*, having at the top a stationary head, *n'*, in which is journaled a sliding head, n^2, with the face plate n^3 adapted to receive and hold the supporting block F^2. This sliding head n^2 is adapted to be adjusted in the stationary head *n'* by a screw threaded shaft n^4, journaled at each end in the stationary head *n'*, and screw threaded in the sliding head n^2. By this operation the block, to receive the work to be operated on, may be adjusted to any desired position to properly receive the paper, after which it may be adjusted to or from the cutting knife, in order that the paper may be severed at the proper point to secure the margin desired, by adjusting the block back or forth by the adjusting screw n^3. The supporting roll B^4, as before described, is adapted to be adjusted to different heights in the frame D, a tension screw *c'* and locking nut c^3 being provided at each adjustment to secure the proper tension on the roll, the roll B^4 being adjusted up or down to secure the proper length of paper through the machine, to more or less dry the glue or other adhesive material which is applied to the work in hand. This roll B^4 is formed with a ringed or grooved periphery, preferably of parallel V shaped grooves, so as to form knife edged bearing rings, which come in contact with the glued or pasted surface of the paper, and thus support the same without removing the adhesive material; these rings also serve the purpose of guiding the paper and preventing lateral movement as the same is drawn through the machine.

The machine as thus described is said to be capable of use in all of the operations necessary in making paper boxes or similar articles. By the use of the auxiliary pasting roll means are provided by which the paste is more evenly distributed on the main strip, while at the same time its employment makes it possible to use two or more strips in covering the box or other article, which strips are glued together in their proper positions as they emerge from the machine. By the use of the tension devices, as described, to each of the rolls means are provided by which the passage of the paper through the machine may be perfectly adjusted and the tension applied thereto at the proper point, so that by loosening the tension of the main pasting roll and tightening that of the auxiliary roll and the supporting rolls the distribution of the paste or glue by the auxiliary roll may be varied as desired.

Fires.

L. M. Deline & Co., printers, Buffalo, N. Y., have been burned out.

E. B. Moore, publisher of the *Empire*, Stephenville, Tex., has been burned out.

The Locke Badeau Paper Company, paper dealer, Mobile, Ala., has been burned out.

The office of the *News*, Sault Ste. Marie, Mich., was damaged by fire April 10. Loss, $2,500; insured.

Peck & Prouty, printers and engravers, Hartford, Conn., were burned out April 12. Insurance $5,000.

Glover & Co., booksellers, &c., Joplin, Mo., were burned out on April 10. Loss, $10,000; insurance, $12,000.

The insurance on the Howland Falls Pulp Company's plant, Howland, Me., which was burned last week was $181,000.

At Camden, N. J., April 9 an explosion of secret chemical preparation at the works of the Fay Manilla Paper Company, foot of Elm street, destroyed the building. Loss, $3,000; fully insured.

Fire broke out on April 9 in the building at 428 Broome street, New York, occupied by Conran & Lary, dealers in paper and twine. The loss to the firm named is $10,000; insurance, $20,000.

At Anderson, Ind., on April 8, one of the American Strawboard Company's ricks of baled straw, containing 500 bales, or about 200 tons, was destroyed by fire. Loss, $2,000. The fire is supposed to have been of incendiary origin.

The three story brick building, 347 and 349 East Water street, Milwaukee, Wis., occupied by H. H. West & Co., booksellers and stationers, was gutted by fire on April 8 and the stock was totally destroyed. The firm's insurance was on stock, $59,500; machinery, $3,000, and fixtures, $4,000.

The New York headquarters of the American Straw Board Company, 102 to 106 Wooster street, were damaged by water on Wednesday morning, April 11. The loss was almost total. Insurance on stock was $38,750, and on fixtures $1,000. The water was used to extinguish a fire which broke out two floors above the company's premises. The company has opened a temporary office in Room 42, Prescott Building, at the corner of Broadway and Spring street.

Personals.

George West, of Ballston Spa, N. Y., celebrated his golden wedding on the 7th inst.

Hamilton T. Disbrow is now in charge of the twine department of Wilkinson Brothers & Co., 419 and 421 Broome street.

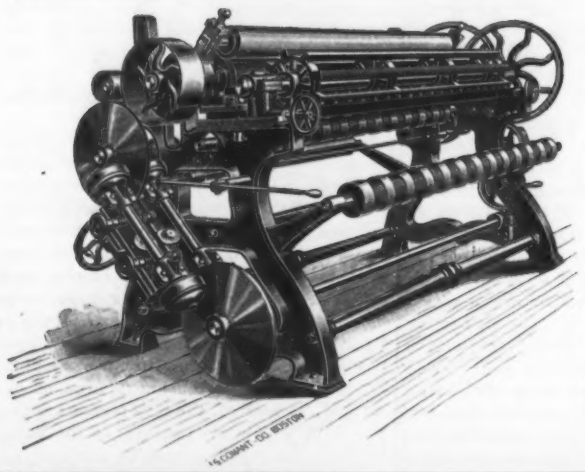
J. W. Towne, of Blake, Moffitt & Towne, who has been on a visit to California, returned to New York last Wednesday.

W. T. Hoey, superintendent of the National Wall Paper Company, New York, became insane on Saturday, April 7, and was taken to a hospital.

Edward Gunzberger, of Germany, arrived here last Thursday on the Spree, and is making his headquarters at the office of George Hamilton, 74 Wall street.

Elizabeth E. Perkins, daughter of George F. Perkins, of Perkins, Goodwin & Co., is to be married next Monday evening to Edward W. Y. Dunn, at the house of her parents, Jersey City, N. J.

Liability of Warehouseman for Loss of Goods.—A warehouseman having a large quantity of goods in storage removed from the warehouse at the expiration of his lease, and the new lessee was submitted as custodian of the goods without the owner's consent. Subsequently they discovered that some of the goods were missing, and they sued the original warehouseman on the warehouse receipts. If the goods were missing at the time of the transfer to the new lessee he was liable, otherwise not.—*Hoeveller v. Meyers (Supreme Court of Pennsylvania), 27 At. Rep. 1081 (82).*



THE "HORNE" FRICTION CUTTER

IS IN ADVANCE OF ANY CUTTER IN USE TO-DAY.

WE HAVE EIGHT RUNNING IN ONE FINISHING ROOM.

AFTER USING ONE SEVEN MONTHS **A CUSTOMER SAYS:** *"You have the Perfect Cutter. We are sure it will save its cost in one year in the saving of waste paper alone."*

THE J. H. HORNE & SONS CO., LAWRENCE, MASS., U. S. A.,
MANUFACTURERS OF PAPER MILL MACHINERY.

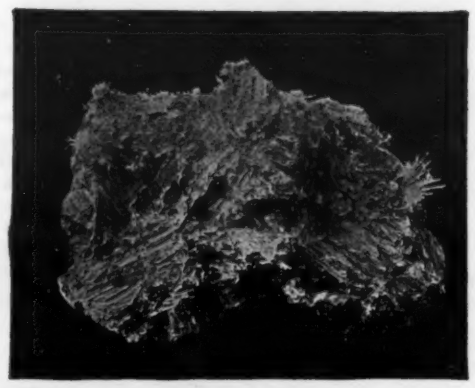
THE GARDNER PULP CO.,

GOUVERNEUR, N. Y.

MANUFACTURERS OF

Asbestos Pulp and Fibrous Talc

FOR PAPER MAKERS.



THE GOTHAM NOISELESS SCREEN.

Screen Plates Stationary. No Accumulations to form Strings and Lumps. Runs at a Slow Speed—150 Revolutions per Minute. Variable Stroke in Blast. The Up Stroke is Double the Speed and of One-Half the Duration of the Down Stroke. A Quick, Forcible Blast Up, with a Slow Suction Down.

IT FILLS THE BILL!

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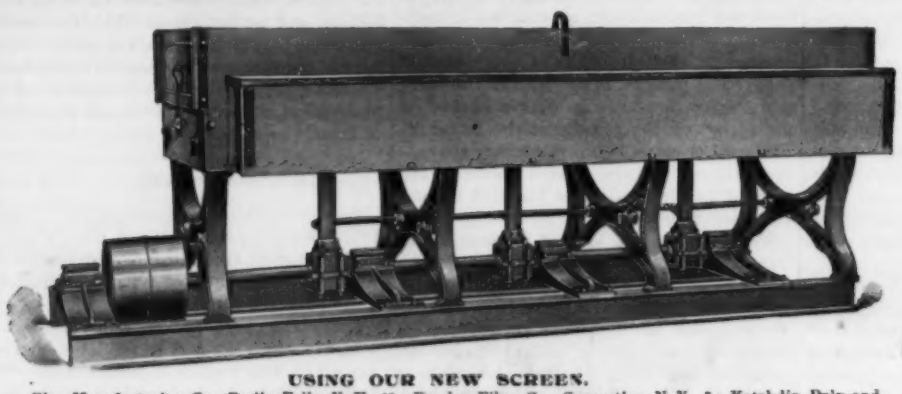

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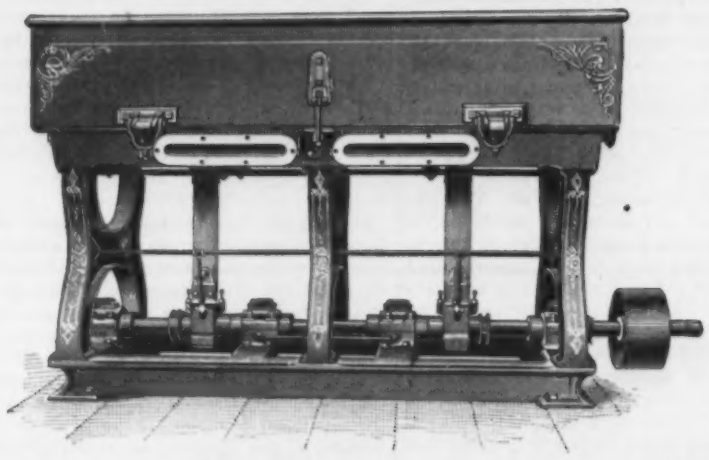

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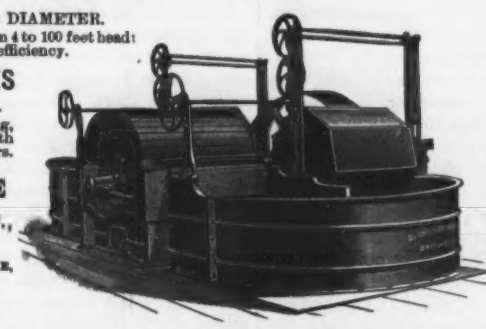

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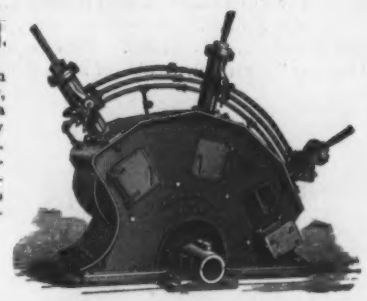

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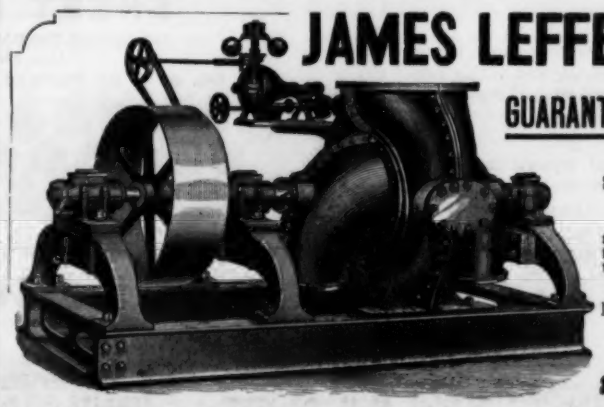

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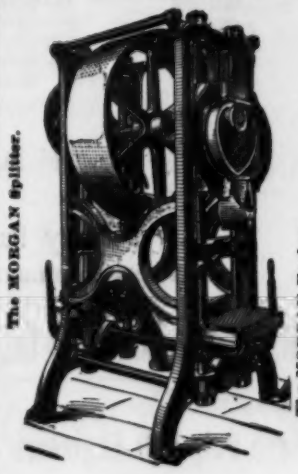

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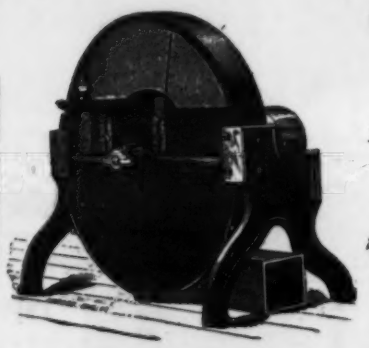

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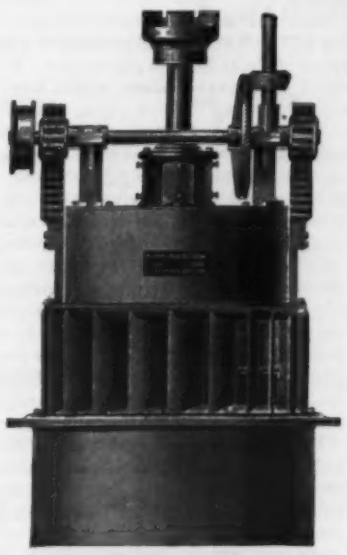

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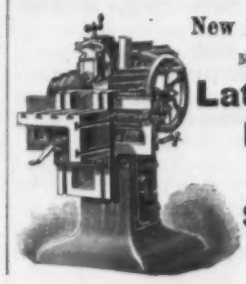

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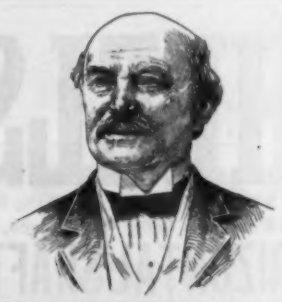
FRANK W. PALMER,
The retiring Public Printer.

the details of an establishment like the Government Printing Office.

The incumbent of the position during the past four years or more has been Frank W. Palmer, who was appointed by President Harrison. With the change of administration and consequent shifting of political control of public offices, the succession to the direction of the public printing has been a contest among various individuals. One



RICHARD ENNIS,
Who ought to have "got there," but didn't.

of the most prominent candidates for the position has been Richard Ennis, of St. Louis, a well-known printer, eminently qualified to discharge its duties. Mr. Ennis ought to have been designated as the Government Printer; but the choice has fallen on Thomas E. Benedict, who served in the same capacity during Mr. Cleveland's first term as President.

Mr. Benedict was born in Warwick, Orange County, N. Y., in 1839, and is the son of William L. Benedict, who served in the Legislature in 1846, and a grandson of James Burt, who for many years was a member of the New York State Senate. In his early days he was engaged in teaching, in railroading and in bookkeeping, but in 1870 he established the Ellenville *Press*, and in 1873 purchased the *Banner of Liberty*. In 1879 he was elected to the New York Assembly, being returned in 1880, 1881 and 1882 by increased majorities. He was afterward Deputy Comptroller of the State.

Motive Power from Artesian Wells.

The utilization of power resident in artesian wells is a comparatively new idea. Its earlier inception had the usual ironical greeting. It was scouted as being more visionary than practical, and while possible as a fad, was not likely to be anything more in an industrial or commercial sense.

The artesian well is of course more directly of service where water is not as a rule obtainable from other sources. In land areas, where nature more or less denies surface water by streams or rain, and soil, otherwise fertile, refuses life to blades of grass or ear of wheat, the artesian well is the only redemption. In such territory, and there is enough of it to make room for ancient kingdoms, it would seem that nature had buried its rivers in subterranean channels, waiting for the ingenuity of man and the point of the drill to tap its secret resources. It is from these arteries, buried under the cuticle of the planet, that the life blood of fertility has to be drawn, and we can anticipate with all certainty the future of the artesian well in redeeming our arid areas. This accomplished, population and industry will drift to the Canaan made out of a desert, and in the process of development will have its needs of artificial power applied to industrial purposes. This is certain, and it would seem that the artesian well will be as serviceable in furnishing motive power as it is in vitalizing the soil.

We have some preliminary examples of this possibility in experiments made in South Dakota. A number of electric light and flour mill plants have been installed and are in daily operation. The city well at Redfield furnishes a direct pressure system of water works, supplying the domestic needs of the city, and is also operative in cases of fire, the department requiring no engines. The closed pressure of this well is 177 pounds, and the cost for maintenance practically nothing. Inside a distance of two miles another well is used for running an electric light plant and also for irrigating purposes. When the water is escaping through a 2 inch pipe the well pressure is 128 pounds. From this it is estimated that with a 4 foot Pelton wheel, 80 horse power could be developed with a 2 inch opening, and 100 horse power with a 2½ inch opening. With the plain undershot wheel at present in place, 50 horse power is developed, and it is calculated that about 15 more is available with it. At Chamberlain, a 150 barrel flour mill and a light plant, formerly run by steam, is now using well-power. The first electric light plant was run from a well at Mellette, a town of 400 inhabitants. This well is only 4½ inches in diameter from top to bottom. The work done in the light plant and mill would require an engine of 40 horse power. It is needless to say that these appropriations of power from artesian wells indicate their possible deployment in other directions.

It is true that the tendency in electrical work has been toward an increase in the size of stations and a centralization of power. The power attained from artesian wells in the Dakota examples requires engineering progress in the opposite direction. In the utilization of numerous small plants would seem to lie one of the problems of electrical engineering. As before said, power obtained from this perennial and apparently inexhaustible source must sooner or later become an industrial need, and in connection with irrigation necessities opens up a field comparatively new in public service. The facts as given are a matter of more than ordinary interest, and the further development of the system may possibly help to solve the pressing problem of utilizing and populating our hitherto unredeemable areas of arid territory.—*Age of Steel.*

Connections to Indicator.

A short time ago I was requested to indicate an engine, and on going to the place found the reducing motion and connections all in place ready for the application of the instrument. The connections were made as follows: The cylinder was drilled and tapped as usual in such cases. Nipples about 6 inches long were screwed into the holes, with an elbow on the end of each. These two elbows were connected, and in the middle of the connecting pipe was an ordinary tee. On either side of this tee and close to it were plug cocks. The stroke of this engine was 36 inches, and it was running nicely, although not perfectly. The indicator was attached and diagrams taken which showed the steam valves to be late in opening. The piston speed was nearly 700 feet per minute. The valves were adjusted so as to show vertical admission lines, but the engine did not pass the centres easily, and if it was stopped when it had just passed a centre, and steam was admitted when it was in that position, it would start backward instead of forward. The engineer examined the marks by which the valves were set, and found that they had nearly one-half inch lead. They were put back where they were before. Was the indicator at fault, the marks wrong or did the long connections cause diagrams to be taken that were misleading?

In another case I indicated an engine having a 36 inch stroke, and running at a piston speed of about 350 feet per minute. It was fitted with angle valves, which were one size larger than the side pipes, and a three-way cock was located midway between them. Several diagrams were taken which showed the valves to be properly set. The side pipe and the angle valve on one end were removed, and the indicator attached so that there was no obstruction whatever between the cylinder of the engine and the piston of the indicator, for the passage between the two was perfectly straight and short. This caused the instrument to be placed in a horizontal position. More diagrams were then taken, and no difference could be detected between them and those which were taken with the three way cock.

Not being fully satisfied with the result I indicated still another engine under the following conditions: The stroke was 36 inches, as before, and the piston speed was about 425 feet per minute. The connections were made by first screwing in a short nipple followed by a globe valve at each end, into which was screwed a close nipple and an elbow. Centrally between these two elbows was an ordinary tee, into which was screwed a short nipple in a horizontal position, followed by an elbow looking upward to receive the indicator.

The reducing motion was also in position when I came, and diagrams taken with this outfit showed that the steam valves were late, and the cylinder pressure was at times as much as 30 pounds less than the boiler pressure. The expansion line was much higher than it should have been, showing that the steam valves leaked.

These side pipes were then removed, and the indicator attached to each end alternately, so that the steam passed through one globe valve and one elbow, the passage being quite short. Diagrams taken with this arrangement showed that the valves opened at the proper time, giving a vertical admission line, and a steam angle at right angles to it, the junction of the two being remarkably square and full, and the expansion line showed that the steam valves were practically tight, although no change whatever had been made in the engine.

The foregoing experience, together with others along this line, has led me to conclude that if anyone claims that long connections always show correct results, he is mistaken, and if another maintains that short connections are a necessity in all cases, he is in error.

If the piston speed is low, and the connections are of ample size, with few turns in them, then long connections will answer every purpose, at least in a majority of cases, but if the piston speed is high, it is much better to have the connections as short as possible.

In this case, as with many other things about steam engineering, it is not always absolutely necessary to follow one inflexible rule, but at the same time it may be well to call attention to the fact that, while long connections sometimes give correct results, short ones always do.—*W. H. Wakeman in American Machinist.*

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Vibration in Machinery.

The proposition that "vibration is loss of power" may be said to be the keynote of a paper recently read by W. Worby Beaumont, M. Inst. C. E., at a recent meeting of the Society of Arts. Mr. Beaumont's paper is well worth the attention of all engineers who are engaged in the designing of machinery, for although a great deal has already been done by some firms in the way of balancing the parts so as to avoid the waste of power and injury to buildings consequent upon vibration, it is clearly a matter which calls for scientific accuracy of calculation and method.

As the author states, the character of the vibration differs with different classes of machinery working at different speeds. One of his chief objects in writing the paper was to show that by far the larger proportion of all the machines in which vibration is set up by reciprocating parts may be so constructed that the waste referred to may not only be prevented, but may be converted into useful work employed in the operation of the essential parts of the machine. Mr. Beaumont indicates his ability to show that this may be done in such a way that the parts operated shall experience much less severe stresses than in any of the arrangements commonly used.

In order to accomplish this practically, Mr. Beaumont proposes what he describes as a paradoxical method, viz., instead of attempting to make an accurate balance according to methods hitherto adopted, he proceeds in an exactly contrary direction and purposely puts that which gives rise to the motion out of balance.

By way of illustrating what he means he refers to a fact of common knowledge, viz., that engine drivers and engineers on many of the old steamboats were in the habit of allowing the holding down bolts, and sometimes others, to be loose purposely, because by doing so the shaking of the boat was observed to be less, though the reason given was that the engine ran more smoothly.—*Machinery Market, London.*

The tariff bill as reported by the Finance Committee of the Senate provides for an internal revenue tax on playing cards of 2 cents a pack, and a duty on imported playing cards of 10 cents a pack, and 50 per cent. ad valorem. There is now no internal revenue tax, and the duty on foreign cards is 50 cents a pack.

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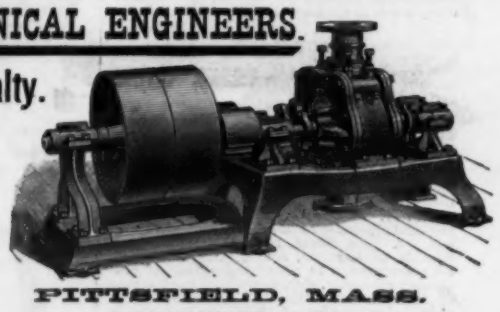

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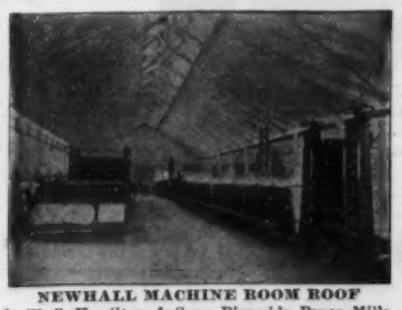

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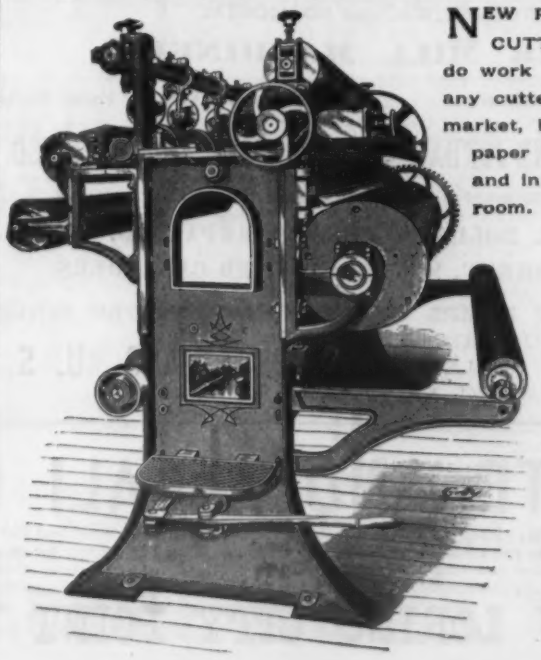

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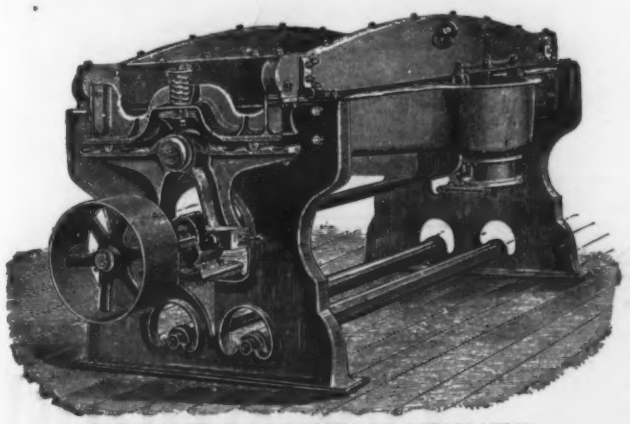

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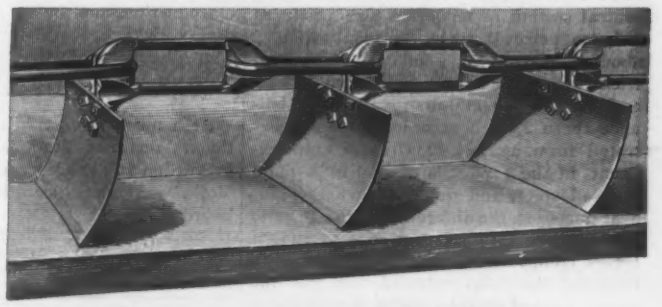

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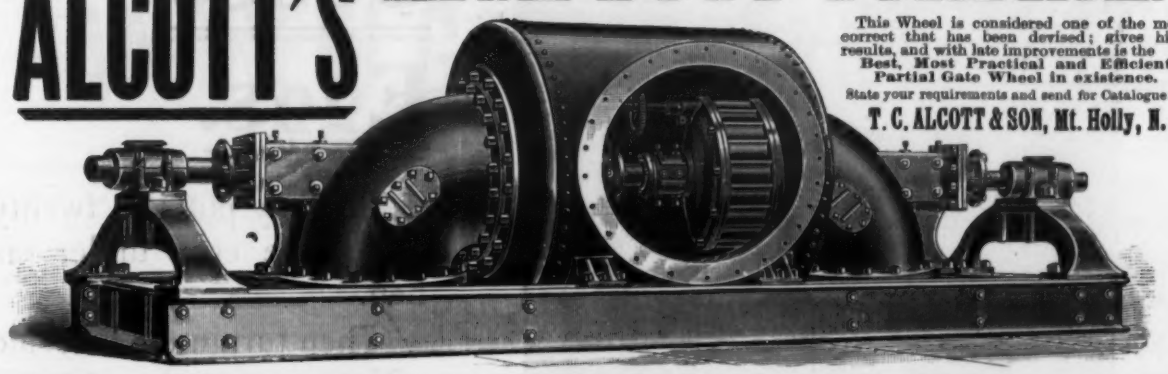

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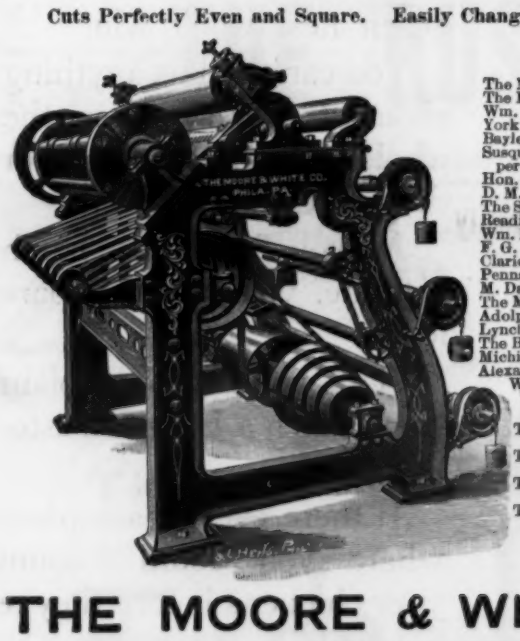

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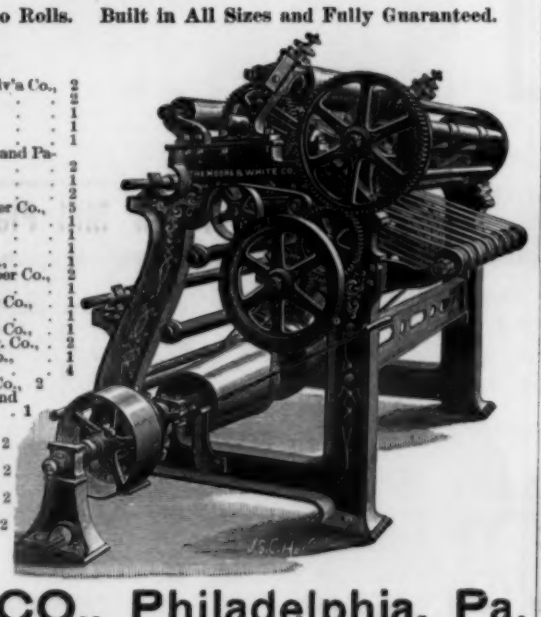

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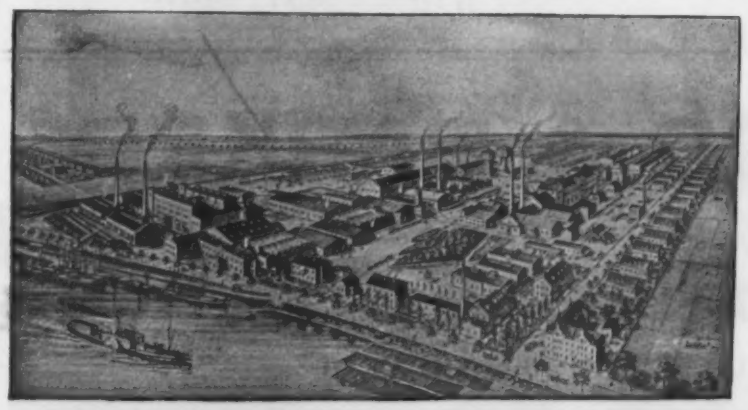

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Electricity for Heating.

In a paper by W. S. Hadaway, Jr., a short time ago, he says: A well-designed central station of moderate size produces a horse power hour by the combustion of about 3 pounds of good coal. The electrical horse power hour developed by this coal has 2,565 heat units; we have to balance these 2,565 heat units in the concentrated form, against 42,000 heat units existent in the 3 pounds of coal in a more diffused state, and determine whether, for heat purposes, the difference in the form of the energy, with its enormous attendant losses compensates for the energy lost in bringing the heat units of coal into the higher form of energy capable of economical transmission to a distance.

It is found in practice that the commercial efficiency of the coal cooking range is somewhere between 3 and 6 per cent; these limits are stated by Tyndall. In a recent discussion before the London Society of Engineers, November 6, 1893, Mr. Beaumont gives the efficiency of the cooking range from experiments of his own as 3.7 per cent, or roughly 4 per cent, indicating that of every 27 pounds of coal burned 26 pounds are thrown away. We have seen that the heat efficiency of the average moderate size central station is about 6 per cent. There is sufficient margin between a heat efficiency of 3.7 per cent. and one of 6 per cent. to warrant the use of electricity as a source of heat in domestic life, and a further extension with apparatus of larger size and higher working economy would give a still greater margin between coal burned under the boiler and that used in the firepot of the range. Thus, with the use of only 1½ pounds of coal per horse power hour, he would secure a commercial efficiency of 12.2 per cent., or 3.3 times the efficiency of the range.

At the outset of course the cost of electrical energy as fuel under average conditions at the power rate will be greater than fuel directly burned. But there are compensating advantages gained which more than offset the additional cost. This has been abundantly proved in actual practice. The saving of attendance and of time, freedom from dirt, coolness of the kitchen, absolute uniformity of heat and ability to regulate it, appeal at once to the householder. There is merit aside from novelty in such practice.

In industrial work, wherever flames are used to secure localized heat, electricity can be advantageously employed. It is more easily regulated than flame, there are no unhealthy products of combustion, the mean temperature of the shop is lowered, the temperatures are constant, the work is more uniform and the entire system cleaner and more complete. For factory use it is the most desirable form of fuel. Laundries, clothing manufactories, hat factories, silk and all textile fabric mills, shirt factories, rubber goods manufactories, furniture factories, &c., are good fields for the use of electricity for heating. In domestic life no source of heat offers so many elements of value as the use of electricity for cooking and laundry work. There is no discomfort, no noxious gases from combustion, and the temperatures attained are constant, so that the question of the discretion of the cook is eliminated, and better results obtained than can possibly be reached from the approximate temperatures of surfaces heated by combustion. It may be fairly stated that people who could afford to do their lighting by electricity could afford to do their cooking and ironing by the same means.

Electricity for heating will be found of the same value to central station electric lighting companies as the use of gas for fuel purposes has proved to the gas lighting companies. Its value lies largely in ability to localize the heat, and it will not be found desirable to use it on a large scale where diffused heat is wanted. High temperatures and small quantities are the proper uses for electricity for fuel.

On a replevin writ obtained by Charles W. Gould from Judge Lacombe, in the United States Circuit Court, in an action in which Jacques Reich, of New Dorp, is complainant, and the Arkell Weekly Company is defendant, a United States deputy marshal seized on Monday the unsold issue, to the number of 3,000, of Frank Leslie's *Illustrirte Zeitung*, in the hands of the publisher and of the American News Company. The complainant alleges that in February he made a pen and ink portrait of Louis Kossuth from a photograph, which he modified in certain features. He sent his drawing to Edward Bierstadt to be reproduced by the artotype process, intending to have copies sold for $3 each. The artotype reproduction was copyrighted. On the first page of the last issue of the *Illustrirte Zeitung* is a picture of Kossuth, which the complainant alleges is an infringement of his copyright. The Federal statute authorizes the seizure of infringing copies of a copyrighted picture, and imposes upon the infringer a penalty of $1 for each infringing copy. The replevin proceeding will be followed by the filing of a bill in equity to enjoin the publication of the alleged illegal reproduction, and for an accounting of the profits and to recover the statutory damages. The *Illustrirte Zeitung* sells for 8 cents a copy.

At a meeting of the trustees of the Stationers' Board of Trade last Tuesday Clark & Sowden and the Merriam Company, New York, were both elected members of the board.

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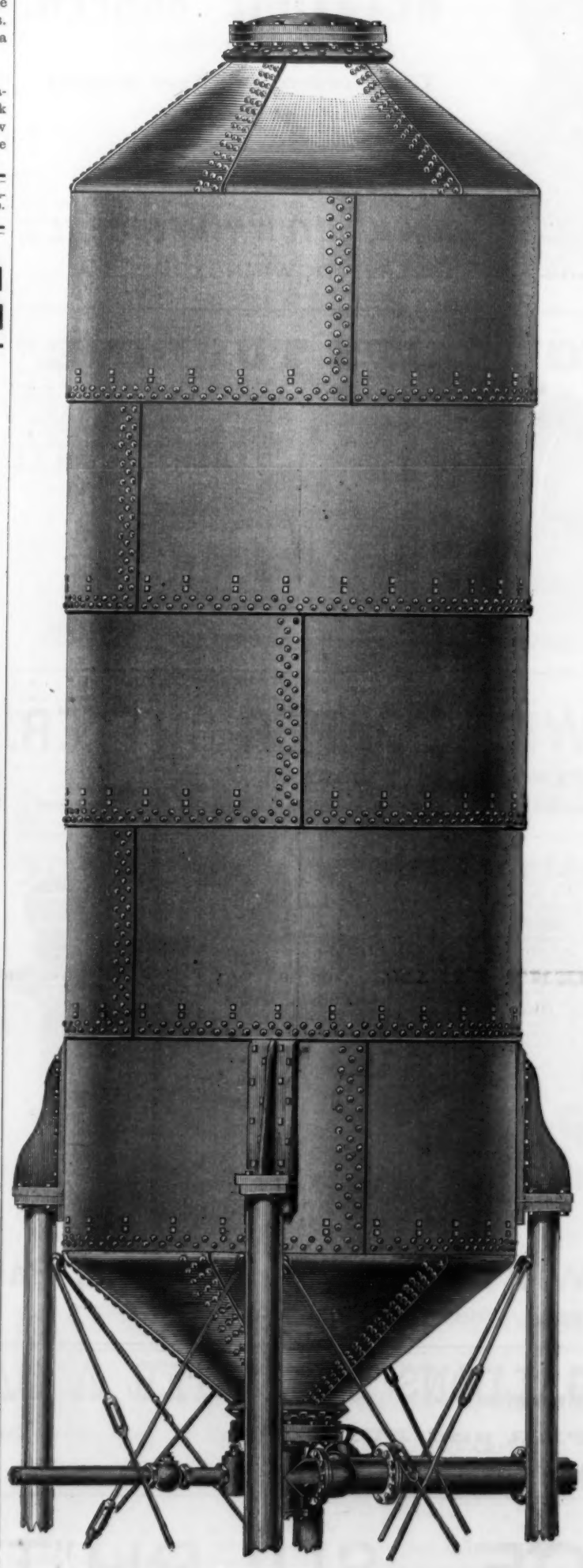

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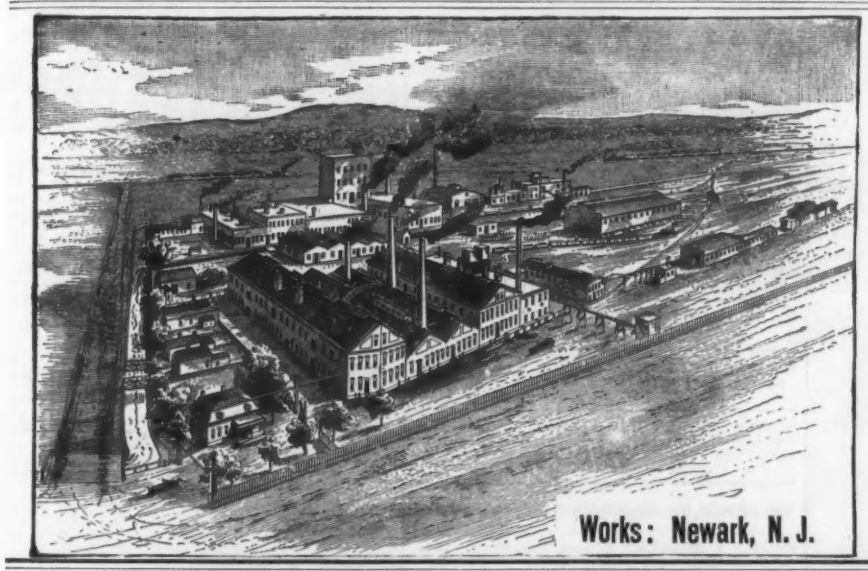
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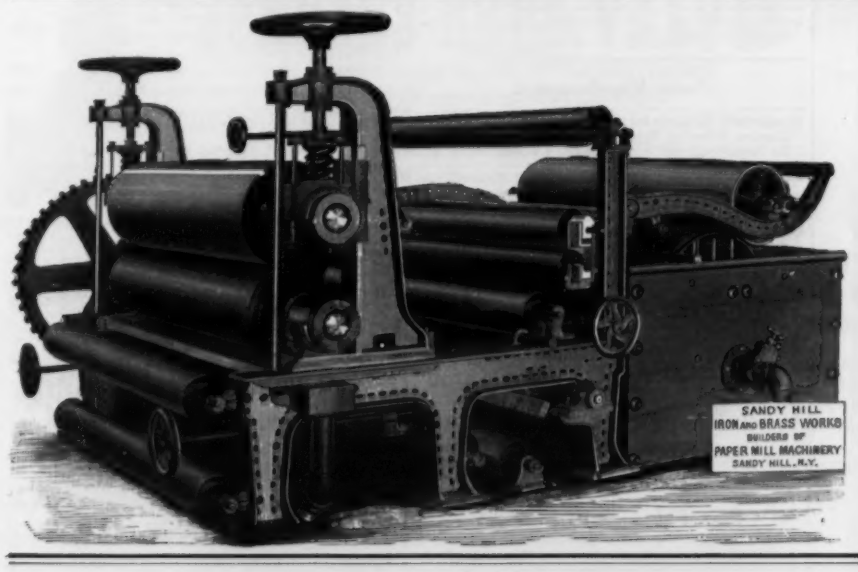

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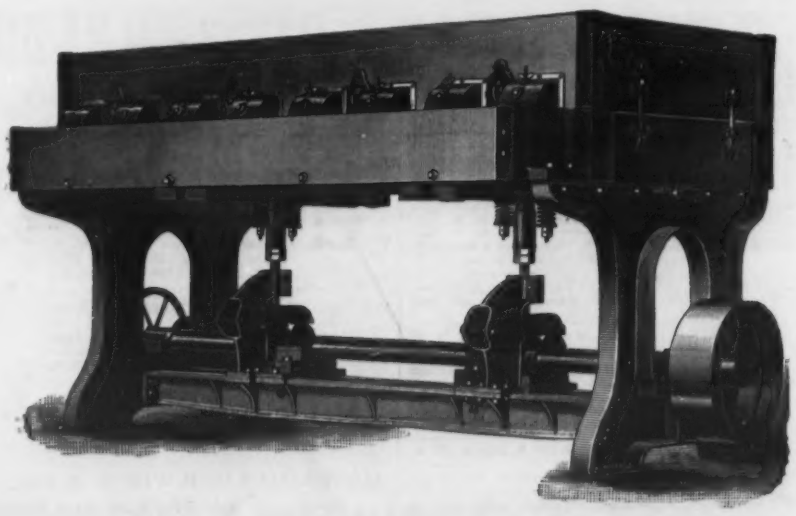

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Few things attract more attention than the moving of heavy machinery through a crowded thoroughfare. When heavy snows and natural obstruction add to the difficulty, additional interest is manifested on the part of the observers.

The three digesters purchased by the Barclay Fibre Company had to be moved 2 miles from the railroad station to the fibre mill over roads which were not by any means level. The huge shells, measuring 10x30 feet and weighing 20 tons, had to be loaded on sleds and hauled along the roads and through the streets of Saugerties. For transporting it was necessary to construct special sleds of green timber, and sixteen horses, four abreast, were required to draw the load. The first quarter mile was covered in exactly eight minutes—a sort of record breaking feat, when all things are considered.

It was no easy matter to turn the corners of the streets with this outfit, and the storekeepers looked for trouble. This was avoided, however, by careful handling. A scow had to be used to convey the shells over the creek. In order to cross this creek it was necessary to cut a channel 400 feet long through 12 inch ice—the thermometer registering below zero—considerable work being necessary in order to keep the channel open. The force required to draw the digesters up hill and keep them from rushing down hill was no small item, but they were landed without mishap.

The digesters were furnished by the Friend & Stebbins Manufacturing Company, West Carrollton, Ohio. The Barclay Fibre Company will have, when completed, one of the finest sulphite plants in the world, and if natural advantages, a well equipped plant and an aggressive management can command success it will surely fall to this company. Richard Stutz, the superintendent, is one of the wideawake sulphite men of the day. He has been spoken of as the best posted man of his age in the business. Be that as it may, he is fully conversant with the details of the business. The entire company is characterized by push, pluck and perseverance. In addition to the Friend & Stebbins Manufacturing Company's digesters it will have all of the modern improvements for fibre making.

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Telegraphing and Telephoning Without Wires.

Genuine progress is being made toward the next great electrical triumph—telegraphing and telephoning without wires. The latest results of English experiments were described in a recent lecture before the Society of Arts by W. H. Preece. A copper wire a half mile long was hung on poles on the coast near Cardiff, the earth completing the circuit. Six hundred yards away another wire 600 yards long, and parallel with the original line, was buried in the sand at the low water mark. More than 3 miles off, on Flat Holme Island, another wire, also 600 yards, and parallel, was laid down. An alternating current, controlled by a Morse key, was sent through the first wire. The signals were reproduced in the wire on the island and read by a pair of telephones. Messages were easily sent.

Similar experiments at 5½ miles were partly successful. The human voice was easily transmitted by the same means 1¼ miles. Preece's critics contend that the results were due to conduction through the earth. He maintains that the results were due to electro-magnetic induction of the rapidly alternating current in the primary circuit, throwing the surrounding ether into oscillations, and the energy was radiated in electric waves. These waves, he says, spread out like waves of light, and if they fall on conductors properly placed and sympathetically prepared are reconverted into an alternate current in the secondary circuit. Enthusiasts on the subject argue that we are fast getting on the track of the secret which, when secured, will enable us to communicate with other planets.

In a paper on belting recently read before the American Society of Mechanical Engineers Fred. W. Taylor said that belts should be made heavier and run more slowly than theory and accepted rules would indicate, not only for the sake of reducing the belt bill in the long run, but even more to avoid the frequent interruptions to manufacture. In figuring the total expense of belting, and the manufacturing cost chargeable to this account, most careful observers soon come to the conclusion that by far the largest item in this account is the time lost on the machines while belts are being relaced and repaired. This is certainly the case, even where the process of manufacture is such that any one machine can be stopped without affecting the running of its neighbors, but far more so in those establishments where the running of a series of machines is dependent one upon another.

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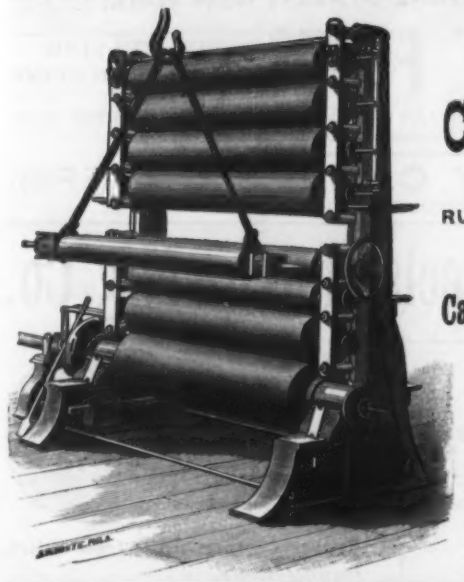

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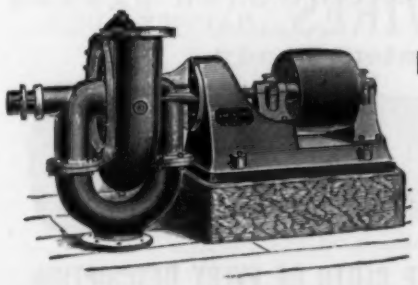

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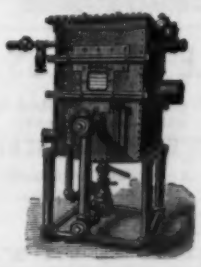

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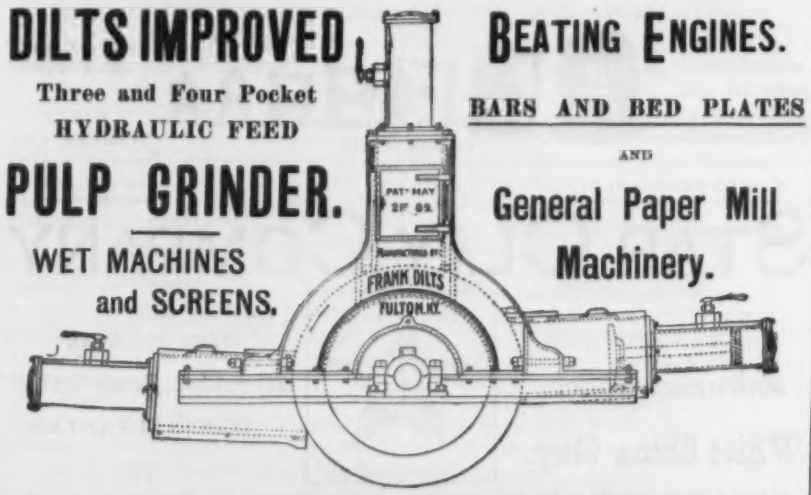

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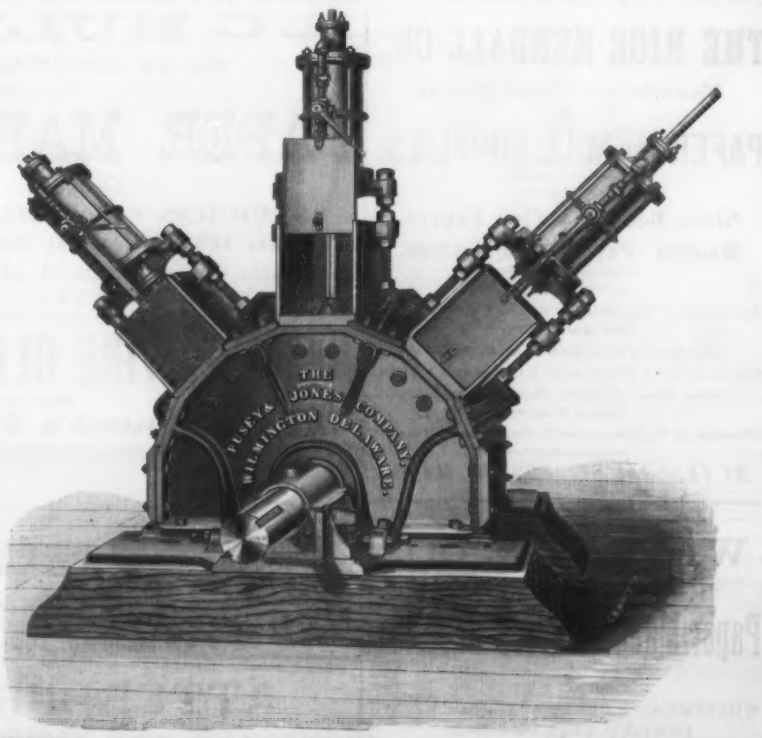

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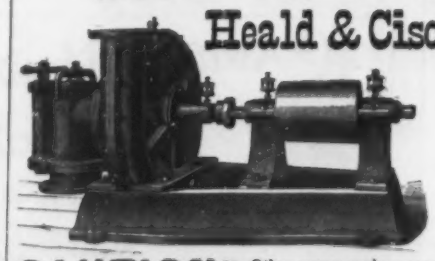

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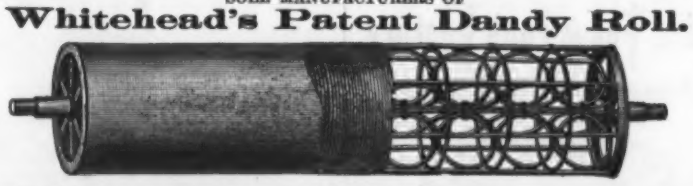

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